

# MONTHLY WEATHER REVIEW.

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Climatological Data for October, 1909.  
DISTRICT No. 1, NORTH ATLANTIC STATES.

WILFORD M. WILSON, District Editor.

GENERAL CLIMATOLOGICAL CONDITIONS.

The month of October takes rank among the coolest and driest Octobers since the establishment of the Climatological Service. The deficiency of temperature was remarkably uniform, except over a small part of New England, while the precipitation was only about half the usual amount, except over a limited area about the headwaters of the Potomac River. The rivers and streams remained at a very low stage throughout the month and in the agricultural districts the problem of obtaining water for stock and for domestic purposes presented serious difficulties.

TEMPERATURE.

The month was unseasonably cool throughout the entire district, except in Maine and along the Massachusetts coast, where the mean temperature averaged slightly above the normal. The excess was greatest in the interior of Maine and ranged from 1° to 3°. For the remainder of the district the mean was generally below the normal for the greater part of the month, the deficiency being most pronounced during most of the second decade and near the close of the month. As a rule the greatest departures from the normal occurred at interior points, especially over the more elevated parts of Pennsylvania, Maryland, and West Virginia and ranged from 2° to 5°. While the current month ranks among the cool Octobers, the deficiency was generally not so great nor so uniform as that of October, 1895.

The most pronounced warm period occurred near the close of the first decade, when the presence of an area of low barometric pressure over the Great Lakes caused the prevalence of southerly winds with gradually increasing temperature over the southern part of the district on the 6th and 7th. This condition extended northward, culminating in decidedly warm weather for the season over the entire district on the 8th, 9th, and 10th, when maximum temperatures of 80° or above were general and 85° or above not uncommon.

A warm period of secondary importance occurred on the 22d and 23d, being the more noticeable because preceded and followed by decidedly cool weather. During this period, however, the mean temperature did not rise much above the normal and maximum temperatures of 65° were not frequent.

There were two marked cool periods during the month, the first following immediately after the warm weather at the close of the first decade and extending over most of the second decade, while the second included the last three days of the month. There was a sharp fall of temperature occurring generally on the 12th and by the morning of the 13th freezing weather was reported from nearly all points except along the coast. The temperature continued low for the season until after the close of the second decade. The first wide-spread frost in New Jersey occurred about the middle of the second decade. The area of high pressure that overspread the district near the close of the month resulted in the coldest weather of the month, minimum temperatures of from 6° to 12° below the freezing point being common in the interior of New England and over the more elevated parts of Pennsylvania and New York.

PRECIPITATION.

The distribution of rainfall was fairly uniform, the total amounts for the month being least over the greater part of New England and the Hudson Valley and greatest over the upper reaches of the Potomac watershed. The deficiency of precipitation which has characterized the conditions during the past three months continued throughout the current month. Out of somewhat more than 350 reporting stations in the district, precipitation in excess of the normal occurred at only 14 stations, 5 of which are located in the eastern part of West Virginia, where heavy rains occurred on the 10th and 11th. For the New England States the average for the month, 1.60 inches, was less than for any previous October since 1887, except 1892, when it averaged 1.50 inches and in 1897 when the average was 1.10 inches. Practically similar conditions obtained over the greater part of New York, while in New Jersey the rainfall for the current month was less than for any previous October in the past 25 years, except October, 1892. The deficiency was not so marked over the Susquehanna watershed in New York and Pennsylvania as in the sections above noted, but over the Delaware and lower Potomac basins the rainfall was exceptionally light. The only considerable part of the district where the rainfall was in excess of the normal was a limited area in West Virginia and Maryland, embracing the headwaters of the Potomac River.

Fair weather prevailed generally during the first decade, but on the night of the 10th general rains set in over the southern part of the district, spreading gradually northward during the 11th and 12th. The precipitation was quite heavy from this storm over the eastern part of West Virginia and moderately heavy over eastern Pennsylvania and New Jersey, but decidedly light, though general, over the remainder of the district. From the 13th to the 22d light and scattered showers occurred. On the 23d there was a general though light rain followed by showery weather that continued until near the close of the month.

Light snow occurred on several dates in the mountainous districts of Pennsylvania, New York, and New England, the heaviest fall being 5.5 inches at Bethlehem, Vt.

RIVER CONDITIONS.

The rivers and streams remained at a very low stage throughout the month, the Delaware at Port Jervis, Phillipsburg, and Trenton being slightly lower than during the month of October, 1908. The Susquehanna at Wilkes-Barre ranged from 2.2 to 2.6 feet above the zero of the gage, but at Harrisburg the readings were less than 1 foot above zero mark throughout the month. Equally low stages were reported from Williamsport on the west branch of the Susquehanna.

MISCELLANEOUS.

The water supply for many interior cities and towns, although used with the utmost economy, was hardly sufficient for domestic use and entirely insufficient for protection against fire.

The weather during the first decade was fair and pleasant with full sunshine, but from the 11th to the 24th partly cloudy to cloudy weather prevailed.



TABLE 1.—Climatological data for October, 1909. District No. 1, North Atlantic States.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.	Prevailing wind direction.
Maine.																				
Bar Harbor	Hancock	20	23	50.6	+ 2.6	82	9	26	21	32	1.81	- 2.56	0.50	0.0	7	11	10	10	sw.	William Miller.
Cornish	York	778	54	47.6	+ 0.1	84	9	22	20	36	1.17	- 3.09	0.38	0.0	8	8	14	9	nw.	T. H. West.
Eastport	Washington	53	37	49.0	+ 2.4	78	9	28	31	24	2.54	- 1.31	0.78	0.2	9	7	10	14	w.	U. S. Weather Bureau.
Fairfield	Somerset	90	24																	E. F. Parker.
Farmington	Franklin	450	12	47.4	- 0.2	84	9	21	31	41	1.54	- 1.90	0.42	0.0	6	8	7	16	n.	State Normal School.
Gardiner	Kennebec	163	17	49.2	0.0	85	9	21	31	40	1.88	- 1.70	0.45	0.0	12	14	4	13	nw.	S. D. Soule.
Greenville	Piscataquis	1,000	5	44.2		77	9	18	31	39	1.73		0.42	T.	11					U. S. Weather Bureau.
Houlton	Aroostook	362	7	47.7		80	11	25	31	35	1.25		0.50	0.0	3	17	2	12	nw.	Bangor & Aroostook R.R.
Lewiston	Androscoggin	185	35	47.6	+ 0.4	88	9	24	31	43	1.84	- 1.94	0.44	0.0	10	12	8	11	nw.	Union Water Power Co.
Madison	Somerset	257	6	45.8		83	10	20	31	39	1.66		0.37	0.0	10	12	4	15	nw.	Wm. Jardine.
Millinocket	Penobscot	386	6	49.4		86	10	23	31	41	1.80		0.33	T.	12	9	3	19	nw.	H. S. Ferguson.
North Bridgton	Cumberland	450	16	49.2	+ 0.1	86	9	26	21	38	1.34	- 2.08	0.53	0.0	7	8	16	7	nw.	G. E. Chadbourne.
Orono	Penobscot	129	40	49.3	+ 3.1	83	9	19	31	40	2.43	- 1.91	0.58	T.	9	12	8	11	nw.	Agricultural Exp. Stat'n.
Patten	Penobscot	550	7	47.0		82	11	20	15	42	2.38		0.92	0.2	9	8	11	7	w.	Bangor & Aroostook R.R.
Portland	Cumberland	99	38	49.6	+ 0.5	81	9	29	31	28	1.50	- 2.16	0.43	0.0	10	11	10	10	w.	U. S. Weather Bureau.
Rumford Falls	Oxford	505	16	47.4	+ 0.7	77	9	26	31	30	1.03	- 2.14	0.26	0.0	9	18	9	4	nw.	Chas. A. Mixer, C. E.
Van Buren	Aroostook	510	7																	Bangor & Aroostook R.R.
Winslow	Kennebec	90	14	47.6		86	9	16	30	46	1.88		0.64	0.0	9	13	9	9	w.	Hollingsworth & Whitney
New Hampshire.																				
Alstead Center	Cheshire	1,120	5	45.5		76	10	25	30	28	1.26		0.48	0.0	10	12	12	7	nw.	Frank Dewing.
Benton				45.4		75	9	20	30	24	0.84		0.39	1.1	10	9	16	6	nw.	State Sanatorium.
Bethlehem	Grafton	1,470	17	43.6	- 2.6	78	10	20	30	36	1.84	- 1.50	0.35	5.5	16	10	4	17	sw.	Benj. Tucker.
Concord	Merrimack	350	49	47.5	- 1.2	83	9	22	21	41	0.82	- 2.42	0.25	0.0	8	9	7	15	w.	U. S. Weather Bureau.
Durham	Stafford	88	14	50.2	+ 1.1	84	9	23	20	41	1.89	- 1.45	0.84	0.0	4	18	3	10	nw.	Agricultural Exp. Stat'n.
Franklin	Merrimack	440	10	47.9		89	10	22	21	47	0.88		0.29	0.0	6	13	12	6	nw.	Dr. C. P. Webster.
Grafton	Grafton	863	23	45.2	- 1.5	84	10	17	21	49	1.00	- 1.91	0.47	T.	7	10	11	9	nw.	P. R. Kimball.
Hanover	Grafton	603	75	45.9	- 0.5	87	10	21	21	49	1.15	- 2.19	0.39	0.1	13	7	13	11	nw.	Dartmouth College.
Keene	Cheshire	506	24	46.6	- 1.0	85	10	19	30	49	1.15	- 2.14	0.40	T.	10	9	10	12	nw.	Samuel D. Wadsworth.
Nashua	Hillsboro	125	24	48.8	- 0.1	82	10	23	21	39	1.32	- 2.17	0.59	0.0	7	13	12	6	nw.	Jackson Company.
Newton	Rockingham		21	47.8	- 0.6	81	9	18	20	38	1.02	- 2.74	0.52	0.0	6	9	20	2	nw.	W. C. Gale.
Plymouth	Grafton	500	21	46.1	+ 1.4	80	9	19	21	43	1.62	- 1.88	0.77	T.	7	11	4	16	w.	Mrs. H. G. Trow.
West Ossipee	Carroll		1																	Camp Ossipee.
Vermont.																				
Bloomfield	Essex		2	43.8		82	10	13	31	42	1.68		0.38	2.0	15	11	9	11	s.	Lyman Falls Co.
Cavendish	Windser	910	6	46.1		87	10	20	21	45	1.31		0.61	T.	6	9	7	14	n.	Miss M. A. Kingsbury.
Chelsea	Orange	1,640	14	42.2	- 3.0	72	9	21	17	26	0.41	- 2.06	0.22	1.0	4	10	1	19	n.	W. F. Dewey.
Jacksonville	Windham	1,000	24	41.4	- 3.2	65	9	20	17	32	4.85	+ 0.80	1.65	T.	6	19	12	0	nw.	Miss Martha French.
Manchester	Bennington	980	10	44.5		76	10	25	20	33	2.35		0.65	1.5	11	9	16	6	sw.	N. M. Canfield.
St. Johnsbury	Caledonia	711	16	46.4	0.0	92	10	20	31	52	1.06	- 1.37	0.45	0.0	11	10	6	15	nw.	Fairbanks Museum.
Woodstock	Windser	700	17	45.0	- 0.8	80	9	20	21	48	1.20	- 1.61	0.65	0.0	4	8	0	23		John S. Eaton.
Massachusetts.																				
Amherst	Hampshire	222	20	48.7	- 0.3	85	10	24	21	42	1.23	- 2.53	0.61	T.	9	14	8	9	nw.	Agricultural Exp. Stat'n.
Blue Hill	Norfolk	640	25	50.0	+ 0.5	81	9	26	30	26	1.46	- 2.92	0.67	0.0	8	13	11	7	w.	Blue Hill Observatory.
Boston	Suffolk	125	39	52.8	+ 0.5	77	9	33	30	24	1.07	- 2.79	0.44	T.	7	12	12	7	w.	U. S. Weather Bureau.
Chestnut Hill	Suffolk	124	29	52.6	+ 1.9	83	9	25	20	40	1.58	- 2.62	0.53	0.0	8	23	1	7		Metrop. Water Board.
Clinton	Worcester	370	13	48.4		79	10	24	19	35	1.52		0.50	T.	7	16	5	10		Metrop. Water Board.
Concord	Middlesex	139	19	48.2	- 1.2	82	10	21	20	39	1.11	- 2.87	0.42	0.0	6	10	13	8	nw.	F. A. Tower.
Fall River	Bristol	200	43	51.6	- 1.6	77	10	30	30	22	1.76	- 2.22	0.62	0.0	9	2	18	11	sw.	C. V. S. Remington.
Fitchburg	Worcester	550	26	50.0	+ 0.9	83	9	26	20	32	1.34	- 2.64	0.44	T.	6	22	2	7	w.	Dr. A. P. Mason.
Framingham	Middlesex	160	29	50.6	+ 0.4	81	9	25	21	36	1.09	- 2.97	0.36	0.0	8					Metrop. Water Board.
Hyannis	Barnstable	31	18	50.8	- 3.5	74	10	31	21	27	3.61	+ 0.25	2.00	0.0	5	17	12	2	sw.	C. F. Sleeper.
Lawrence	Essex	51	25	49.8	- 0.2	83	9	23	21	37	1.02	- 2.01	0.56	0.0	7	10	19	2	w.	Essex Company.
Lowell	Middlesex	100	24	51.6	+ 1.7	84	10	27	20	37	1.20	- 2.46	0.58	0.0	5					Prop's. Locks and Canals.
Middleboro	Plymouth	53	23	48.4	- 1.4	83	10	18	30	44	1.73	- 2.81	0.65	0.0	7	10	15	6	w.	A. R. Gurney.
Monson	Hamden	420	25																	Dr. G. E. Fuller.
Nantucket	Nantucket	15	23	53.8	- 0.7	76	10	36	30	20	4.40	+ 1.01	1.43	0.0	11	10	13	8	w.	U. S. Weather Bureau.
New Bedford	Bristol	88	97	53.2	+ 1.2	78	10	33	29	21				0.0		21	3	7	sw.	City Engineer.
Norfolk	Norfolk	244	6	49.4		84	9	19	30	46	1.50		0.55	0.0	5	18	6	7	w.	Miss Ruby H. Martyn.
Northampton	Hampshire	205	1	48.0		80	9	26	30	39	1.78		0.64	0.0	7	17	10	4	nw.	D. E. Hoxie.
Plymouth	Plymouth		24	49.2		70	7	28	30	30	2.26		0.82	0.0	7	19	3	9	e.	Miss L. B. Knapp.
Provincetown	Barnstable	40	22	53.4	+ 0.8	78	10	34	30	24	2.86	- 0.92	1.60	0.0	4	26	0	5	sw.	Gideon Bowley.
Rockport	Essex	25	7	51.2		75	9	26	30	28	2.22		0.75	0.0	5	14	12	5	nw.	C. F. P. Bearse.
Rutland	Worcester	1,160	7	47.6		84	10	24	29	35	1.73		0.75	T.	10	20	6	5	sw.	State Sanatorium.
South Egremont	Berkshire	764	7	44.0		72	9	18	21	32	1.22		0.46	0.0	9				nw.	Roscoe C. Taft.
Turners Falls	Franklin	200	18	48.1	- 1.8	76	9	27	21	34	1.28	- 1.48	0.51	0.0	6					Turners Falls Co.
Westboro	Worcester	298	35	51.8	+ 0.6	84	10	21	20	39	1.50	- 2.49	0.51	0.0	5					G. S. Newcomb.
Williamstown	Berkshire	711	28	46.5	- 1.6	78	10	26	20	33	1.33	- 1.91	0.26	T.	10	10	12	9	w.	Williams College.
Worcester	Worcester	518	17	50.7	+ 0.1	83	10	29	30	30	1.08	- 2.31	0.64	T.	7	10	10	11	nw.	G. W. Swan.
Rhode Island.																				
Block Island	Newport	26	29	53.7	- 1.6	75	10	34	29	16	1.74	- 2.37	0.51	0.0	11	15	3	13	sw.	U. S. Weather Bureau.
Bristol	Bristol	53	23	52.2	- 0.1	71	10	34	20	20	1.54	- 2.20	0.50	0.0	8	23	5	3	sw.	N. G. Herreshoff.
Kingston	Washington	250</																		

TABLE 1.—Climatological data for October, 1909. District No. 1—Continued.

Stations.	Counties	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of overcast days.
New York—Cont'd.																			
Bedford	Westchester	450	11	51.8	- 0.2	84	9	25	20	39	1.15	- 2.79	0.40	0.0	6	19	7	5	Dr. L. Rosenberg.
Binghamton	Broome	875	18	46.5	- 2.7	80	9	25	30	37	1.53	- 1.59	0.86	0.0	13	9	5	17	U. S. Weather Bureau.
Bouckville	Madison	1,350	12	44.4	- 4.6	76	10	20	30	33	2.10	- 1.91	0.57	T.	17	7	7	17	L. W. Griswold.
Boyd's Corners	Putnam	560	27								1.23	- 3.11							Thomas Manning.
Carmel	Putnam	500	17	47.6	- 3.5	72	9	23	14	29	1.08	- 3.01	0.36	0.0	8	21	1	9	Thomas Manning.
Chatham	Columbia	470	8	48.0		78	9	24	20	31	0.87		0.35	T.	10	11	10	10	Morton R. Tank.
Cooperstown	Otsego	1,250	55	43.9	- 2.8	73	10	23	30	32	2.56	- 0.78	0.90	0.0	12	10	7	14	G. Pomeroy Keese.
Corinth	Saratoga	542	7								1.05		0.40	0.0	3				A. M. Hollister.
Cortland	Cortland	1,129	47	46.0	- 0.9	79	10	23	30	36	2.96	- 0.93	1.45	T.	16	9	10	12	F. G. Baker.
Cuthogue	Suffolk	32	32	53.4	- 1.8	80	10	30	20	33	1.74	- 1.68	0.45	0.0	6	17	13	1	Wm. A. Fleet.
De Ruyter	Madison	1,300	6	45.6		84	9	23	30	44	2.51	- 2.64	0.67	T.	15	13	4	14	B. D. Crandall.
Easton	Washington		19								1.00	- 2.64	0.54	0.0	4				H. Taber.
Elmira	Chemung	863	27	48.6	- 2.4	84	9	25	30	42	1.81	- 1.25	1.02	0.0	6	9	10	12	Gerity Bros.
Fort Hunter	Montgomery	280									1.60		0.60	T.	5	8	6	17	C. E. Wing.
Fort Plain	Montgomery	316	5	48.2		77	10	28	30	29	1.73		0.31	0.0	12	14	6	11	Abram Devendorf.
Glens Falls	Warren	340	15	48.0	- 1.1	83	10	23	20	38	0.92	- 2.15	0.35	T.	9	11	5	15	Prof. C. L. Williams.
Gloversville	Fulton	850	17	44.4	- 3.3	80	9	22	21	37	1.28	- 1.87	0.30	T.	11	13	10	8	W. L. McLean.
Greenfield Center	Saratoga	314	11	45.9	- 4.1	79	9	22	30	36	0.96	- 2.42	0.22	0.0	8	10	11	10	S. E. Darrow.
Greenwich	Washington	425	12	48.0	- 2.2	85	9	19	30	42	0.56	- 2.42	0.20	0.0	11	11	14	6	I. V. H. Gill.
Griffin Corners	Delaware	2,260	9	44.2		80	9	19	21	40	0.97		0.34	T.	7	12	7	12	Sylvanus Kelly.
Hancock	Delaware										2.33	- 0.51	0.65	T.	10				Daniel B. Van Eaton.
Haskinville	Steuben		9								1.43		0.37	0.0	9	12	12	7	W. G. Collins.
Hoosick Falls	Rensselaer	410									1.80	- 1.86	0.50	0.0	7	15	4	12	Sanford L. Cluett.
Indian Lake	Hamilton	1,705	10	43.2	- 2.0	85	9	17	21	47	1.80	- 1.86	0.50	0.0	7	15	4	12	Lester Severie.
Jeffersonville	Sullivan	1,240	6	46.2		82	9	19	20	46	1.26		0.50	T.	7	15	10	6	Chas. Wilfert, Jr.
Lake Pleasant	Hamilton			47.0		80	15	24	21	48	1.20		0.40	0.0	5				Willett Lawrence.
Liberty	Sullivan	2,300	23	42.6	- 4.4	74	10	23	29	33	1.39	- 2.23	0.41	T.	6	16	7	8	Dr. H. M. King.
Little Falls	Herkimer	924	11	46.1	- 3.3	80	9	22	30	31	2.20	- 1.26	0.48	1.5	10	12	11	8	O. J. Demster.
Mohawk Lake	Ulster	1,245	13	48.4	- 0.9	70	10	27	29	28	1.22	- 2.55	0.65	T.	4	17	6	8	A. K. Smiley.
Morehouseville	Hamilton	1,697	1	42.4		82	9	18	30	41	3.40		0.55	1.0	10	19	2	10	Theodore C. Remonda.
Mount Hope	Westchester	200	12	49.4	- 3.5	80	9	22	20	40	1.50	- 3.21	0.45	0.0	6	15	11	5	Wm. A. Cornelius.
Newark Valley	Tioga	825	10								2.69	- 1.00	0.80	T.	12	12	4	15	M. D. Clinton.
New Berlin	Chenango		2								2.10		0.92	0.0	11	5	4	22	Roger Greene.
New Lisbon	Otsego	1,234	19	43.0	- 3.0	80	9	14	30	43	2.37	- 0.97	0.92	T.	12	9	3	19	G. A. Yates.
New York City	New York	314	84	53.2	- 2.4	75	8	35	30	24	0.74	- 2.97	0.31	0.0	8	15	8	8	U. S. Weather Bureau.
North Creek	Warren	1,002	1	45.8		80	9	21	30	39	5.35		2.98	0.0	6	10	10	11	W. G. Kenwell.
Northville	Fulton	742	7								1.12		0.52	0.0	5	10	5	16	P. C. Pickard.
Norwich	Chenango	1,015	3	47.8		76	8	20	30	36	1.88		1.19	1.0	9	15	10	6	H. S. Hopkins.
Oneonta	Otsego	1,112	15	42.2	- 7.6	84	9	22	29	38	1.47	- 2.22	0.50	T.	8	11	3	17	H. W. Lee.
Oxford	Chenango	916	44	45.6	- 1.4	76	9	20	30	34	2.28	- 1.19	0.60	0.0	11	9	9	13	John P. Davis.
Port Jervis	Orange	470	25	49.4	- 1.3	82	9	24	20	39	1.20	- 2.49	0.47	0.0	6	12	8	11	Prof. John M. Dolph.
Salisbury	Herkimer	1,526	12	44.6	- 4.4	81	9	18	30	36	3.64	- 0.63	0.52	3.0	14	11	11	9	Joseph Ryan.
Salisbury Mills	Orange	314	10	48.4		80	10	21	20	37	0.88	- 4.05	0.40	0.0	4	19	3	9	H. P. Ramadell.
Scarsdale	Westchester	200	5	51.8		80	7	28	20	40	1.66		0.90	0.0	7	21	6	4	C. H. Wilmarth.
Setauket	Suffolk	40	24	52.4	- 1.9	71	9	34	14	23	2.10	- 2.44	0.70	0.0	8	17	6	8	Selah B. Strong.
Sherburne	Chenango		2								1.16		0.64	0.0	3				E. B. Collins.
Southampton	Suffolk	36	8	51.8		75	10	29	30	28	1.68		0.41	T.	7	16	14	1	W. L. Jagger.
Southeast Reservoir	Putnam	310	14								1.17								Thomas Manning.
Spier Falls	Saratoga	400	8	46.2		81	10	21	19	39	0.69		0.31	0.0	4	14	9	8	W. F. Anderson.
Trenton Falls	Oneida	751	6								3.70		0.82	2.5	12	6	2	23	C. W. Young.
Tribeshill	Montgomery	268									2.20		0.50	0.0	7	19	3	9	R. S. Marshall.
Utica	Oneida	537	4								3.16	- 0.31	0.75	0.0	12				W. E. Young.
Wading River	Suffolk	112	3	50.8		77	10	25	14	36	2.45		0.60	0.0	8	23	5	3	H. B. Fullerton.
Wappingers Falls	Dutchess	110	19	50.4	- 1.6	74	9	25	30	30	1.21	- 2.78	0.26	0.0	6	13	15	3	H. C. Townsend.
Warwick	Orange	538	9								0.82		0.32	0.0	4				John W. Sly.
Waverly	Tioga	824	27	46.3	- 3.3	82	9	18	30	47	2.32	- 0.76	1.09	0.0	15	9	8	14	Hon. J. F. Shoemaker.
West Berne	Albany	936	12	46.8	- 2.8	83	9	18	21	43	0.83	- 2.71	0.68	0.0	5	7	7	17	W. J. Haverly.
West Point	Orange	167	60	48.0	- 5.4	74	10	30	24	34	0.69	- 3.13	0.31	0.0	3	17	4	10	Maj. Chas. M. Gandy.
Windham	Greene	1,520	10	44.7	- 3.5	78	10	19	21	39	1.26	- 2.28	0.39	T.	6	9	18	4	A. R. Mott.
Pennsylvania.																			
Altoona	Blair	1,181	21	44.8	- 6.6	80	9	21	20	43	2.71	+ 0.29	1.27	0.0	6				Dr. C. B. Dudley.
Bellefonte	Center	826	8	48.9		84	9	23	20	48	2.44		1.10	0.0	5	12	7	12	Fred Kurta.
Center Hall	Center	1,272	10	46.8	- 4.7	80	8	24	20	42	2.39	- 0.62	1.00	T.	5	1	20	10	S. W. Smith.
Clearfield	Clearfield	1,107	1	46.2		85	9	20	25	49	3.26		1.83	T.	9	11	6	14	Raymond C. Ogden.
Coatesville	Chester	380	21	51.2	- 2.2	81	9	27	20	48	1.77	- 2.12	1.32	0.0	8	19	5	7	W. T. Gordon.
Drifton	Luzerne	1,633	11	42.8	- 5.4	72	9	20	30	35	3.98	+ 0.23	1.56	T.	8	13	9	9	Eckley B. Cox, Jr.
Dushore	Sullivan	1,590	11																Dr. J. D. Benjamin.
Easton	Northampton	325	26	50.3	- 2.4	75	9	26	30	35	1.04	- 2.39	0.48	0.0	6	10	17	4	J. W. Colliton.
Emporium	Cameron	1,050	22	45.2	- 4.9	78	9	18	30	42	2.14	- 1.01	1.19	0.5	7	9	4	18	T. B. Lloyd.
Ephrata	Lancaster	384	9	49.7		83	9	25	30	44	2.33		1.16	0.0	9	16	5	1	



TABLE 1.—Climatological data for October, 1909. District No. 1—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.	Prevailing wind direction.
Pennsylvania—Cont'd.																				
Seranton.	Lackawanna.	805	9	48.2	- 3.2	82	9	28	30	36	1.86	- 1.05	1.08	T.	9	11	6	14	sw.	U. S. Weather Bureau.
Selinsgrove.	Snyder.	455	21	49.0	- 3.1	83	9	24	20	46	2.05	- 1.60	0.63	T.	9	4	13	14	nw.	J. M. Boyer, C. E.
State College.	Center.	1,191	21	46.4	- 4.1	77	9	25	20	38	3.06	- 0.15	1.43	T.	9	9	10	14	w.	Prof. Wm. Frear.
Towanda.	Bradford.	754	14	47.4	- 3.2	81	10	23	30	42	2.50	- 0.81	1.09	T.	8	10	4	17	w.	Hiram E. Bull, C. E.
Wellsboro.	Tioga.	1,327	32	45.0	- 4.0	82	9	21	20	47	2.21	- 1.33	1.12	T.	9	10	14	7	w.	O. L. White.
West Chester.	Chester.	455	55	51.3	- 2.8	79	9	29	29	36	1.11	- 2.77	0.43	0.0	9	18	4	9	w.	J. C. Green, D. D. S.
Wilkes-Barre.	Luzerne.	575	24	48.0	- 3.2	82	9	24	30	40	2.57	- 0.41	1.67	0.0	5	5	12	14	nw.	A. W. Betterly.
Williamsport.	Lycoming.	530	19	49.0	- 2.7	81	9	22	20	37	2.05	- 1.40	1.30	0.0	5	15	2	14	nw.	Henry H. Guise.
New Jersey.																				
Asbury Park.	Monmouth.	22	21	52.4	- 3.2	71	7	30	29	33	1.69	- 2.41	0.73	0.0	11	18	8	5	w.	B. H. Obert.
Atlantic City.	Atlantic.	16	36	53.2	- 4.2	76	7	30	30	26	1.82	- 1.48	0.60	0.0	10	17	8	6	nw.	U. S. Weather Bureau.
Bayonne.	Hudson.	50	19	53.0	- 2.7	78	8	32	30	32	3.78	- 3.01	0.32	T.	8	17	6	8	nw.	J. H. Eadie.
Belvidere.	Warren.	289	19	49.0	- 4.0	81	9	23	20	44	1.12	- 2.72	0.55	0.0	8	18	2	11	nw.	S. J. Hixson.
Bergen Point.	Hudson.	37	12								0.99	- 3.06	0.33	0.0	10				nw.	Dr. W. H. Mitchell.
Boonton.	Morris.	413	19								1.41	- 2.42	0.70	0.0	4	20	1	10	nw.	F. G. McIntosh.
Bridgeton.	Cumberland.	30	34	52.8	- 4.2	80	8	25	30	49	1.11	- 2.78	0.36	0.0	9				nw.	H. A. Jordan.
Burlington.	Burlington.	12	25								1.22	- 2.26	0.49	0.0	5	20	5	6	nw.	D. S. B. McCoy.
Canton.	Salem.	24	15								1.61	- 1.69	0.32	0.0	8	14	12	5	nw.	J. H. Maskell.
Cape May City.	Cape May.	17	25	55.6	- 2.0	74	7	34	20	24	1.61	- 1.69	0.32	0.0	8	14	12	5	nw.	U. S. Weather Bureau
Cape May C. H.	Cape May.	19	22	54.6	- 2.1	75	9	33	29	33	1.72	- 1.74	0.65	0.0	9	15	9	7	nw.	L. T. Garrettson.
Charlotteburg.	Passaic.	719	17	48.6	- 2.2	78	9	18	20	46	1.10	- 3.83	0.51	0.0	7	16	8	7	nw.	G. S. Briggs.
Chatham.	Morris.	234	7								1.28		0.33	0.0	10				w.	M. A. Butler.
Clayton.	Gloucester.	126	18	51.5	- 4.8	80	8	26	30	40	1.48	- 1.94	0.72	0.0	5	17	7	7	w.	W. T. Farley.
College Farm.	Middlesex.	100	14	50.6	- 4.2	79	9	26	20	41	1.22	- 2.87	0.57	0.0	10	16	7	8	nw.	G. B. Thrasher.
Culver's Lake.	Sussex.	848	8								1.21		0.50	T.	8	15	6	10	w.	B. E. Riker.
Dover.	Morris.	575	25	47.4	- 3.3	76	9	20	20	41	1.11	- 3.01	0.35	T.	7	14	9	8	w.	W. C. Harris.
Elizabeth.	Union.	33	30	52.2	- 2.5	76	9	31	20	33	0.40	- 3.53	0.14	0.0	8	16	10	5	w.	W. M. Oliver.
Englewood.	Bergen.	135	23								0.93	- 2.90	0.29	0.0	9	16	7	8	w.	W. C. Tucker.
Flemington.	Hunterdon.	187	21	51.2	- 3.9	81	9	25	14	47	0.93	- 2.90	0.29	0.0	9	16	7	8	w.	H. E. Deats.
Freehold.	Monmouth.	187	28								1.27	- 2.28	0.35	0.0	5	20	6	5	w.	F. T. Cooper.
Friesburg.	Salem.	100	18	51.7	- 4.5	81	8	22	20	43	1.27	- 2.28	0.35	0.0	5	20	6	5	w.	C. F. Perry.
Haddonfield.	Camden.	75	1	51.5		80	8	29	20	43	1.25	- 1.90	0.58	0.0	9				nw.	C. F. Richardson.
Hammonton.	Atlantic.	80	12								1.51	- 1.90	0.58	0.0	9				nw.	Orville Bassett.
Hightstown.	Mercer.	85	18	50.9	- 3.6	80	8	26	20	44	1.17	- 2.83	0.36	0.0	9	18	5	8	nw.	Ernest Wenger.
Imlaystown.	Monmouth.	106	23	51.0	- 3.3	82	9	25	20	42	1.27	- 2.87	0.62	0.0	10	19	4	8	nw.	Dr. F. C. Price.
Indian Mills.	Burlington.	76	9	51.0	- 3.9	81	8	21	30	45	1.52		0.60	0.0	9	19	6	6	nw.	James Armstrong.
Jersey City.	Hudson.	15	4	53.4		77	10	33	30	30	0.71		0.31	0.0	8	15	9	7	nw.	S. K. Pearson, jr.
Lakewood.	Ocean.	54	8								1.04	- 2.81	0.45	0.0	9	17	6	8	nw.	H. R. Major.
Lambertville.	Hunterdon.	95	23	50.3	- 3.2	79	9	26	20	43	1.04	- 2.81	0.45	0.0	9	17	6	8	nw.	W. R. Bowne.
Layton.	Sussex.	550	10	47.0	- 3.0	81	9	18	20	47	1.17	- 2.86	0.50	0.0	7	19	6	6	w.	W. C. Hursh.
Little Falls.	Passaic.	175	7								0.86		0.28	0.0	10				w.	F. Fearn.
Long Branch.	Monmouth.	30	1	52.8		76	7	29	30	37	0.71		0.27	T.	8				nw.	B. B. Bobbitt.
Mahwah.	Bergen.	312	7								0.71		0.27	T.	8				nw.	M. F. Brooks.
Moorestown.	Burlington.	71	47	51.8	- 2.4	78	9	30	14	39	1.06	- 2.63	0.31	0.0	10	19	3	9	nw.	J. C. Beas.
Newark.	Essex.	140	65	52.8	- 1.6	80	9	30	20	34	0.55	- 3.27	0.29	0.0	9	12	9	10	nw.	Prof. Wm. Wiener.
New Brunswick.	Middlesex.	61	56								1.14	- 2.49	0.40	0.0	8				nw.	W. T. Woerner.
Newton.	Sussex.	678	30	49.1	- 2.6	82	8	23	20	42	1.24	- 2.59	0.65	0.0	8	15	7	9	nw.	B. H. Kienbaum.
Northfield.	Atlantic.		1								1.81		0.63	0.0	9				nw.	W. L. Flick.
Oceanic.	Monmouth.	16	23	52.3	- 3.0	76	7	30	14	38	1.76	- 2.36	0.82	0.0	12	19	3	9	nw.	Prof. C. E. Dietz.
Paterson.	Passaic.	110	39	52.0	- 2.3	81	9	29	20	38	0.81	- 3.43	0.40	0.0	9	13	12	6	nw.	H. A. Probert.
Phillipsburg.	Warren.	196	7	50.0		82	9	27	20	41	1.10		0.51	0.0	9	17	5	9	w.	D. W. Smith.
Plainfield.	Union.	100	22	50.1	- 3.9	80	9	26	14	42	1.10	- 3.13	0.38	0.0	9	14	8	9	nw.	John Neagle.
Pleasantville.	Atlantic.	26	11								1.63	- 2.57	0.60	0.0	9				nw.	L. Van Gilder.
Pompton Plains.	Morris.	195	7								0.89		0.28	0.0	8				nw.	M. S. Taylor.
Port Norris.	Cumberland.	8	1								0.99	- 2.76	0.31	0.0	9	17	3	11	nw.	J. H. Barraclough.
Rancocas.	Burlington.	68	46								0.99	- 2.76	0.31	0.0	9	17	3	11	nw.	Spencer Haines.
Rivervale.	Bergen.	70	18	49.0	- 3.3	79	9	22	20	42	0.97	- 3.22	0.40	0.0	8				nw.	G. S. M. Holdrum.
Runyon.	Middlesex.	18	3								0.97	- 3.22	0.40	0.0	8				nw.	J. H. Cottrell.
Somerville.	Somerset.	76	30	50.4	- 3.3	80	8	25	20	42	1.04	- 2.46	0.34	0.0	9	15	6	10	nw.	P. Hardcastle.
South Orange.	Essex.	200	40	50.0	- 2.9	75	8	28	20	31	0.62	- 3.27	0.36	0.0	9	19	4	8	nw.	Dr. W. J. Chandler.
Sussex.	Sussex.	442	19	47.1	- 5.3	78	9	23	20	39	0.86	- 2.63	0.37	0.0	8	16	8	7	w.	Prof. W. H. Seeley.
Trenton.	Mercer.	60	40	52.9	- 4.2	76	10	30	30	32	1.30	- 2.51	0.57	T.	7	15	10	6	nw.	E. R. Cook.
Tuckerton.	Ocean.	23	16	51.6	- 3.8	78	7	27	14	42	1.48	- 2.49	0.64	0.0	6	15	8	8	w.	F. R. Austin.
Vineland.	Cumberland.	118	42	52.1	- 3.4	83	8	24	30	41	1.39	- 2.12	0.48	0.0	7	16	8	7	nw.	Alfred Chalmers.
Woodbine.	Cape May.	43	18																nw.	Prof. R. D. Maltby.
West Virginia.																				
Bayard.	Grant.	2,500	6	44.8		74	9	20	20	45	4.88		1.70	0.1	12	18	3	10	w.	Solomon Clark.
Burlington.	Mineral.	875	13	49.6	- 3.5	80	10	24	20	48	3.45	+ 1.51	1.75	0.0	2	18	10	3	w.	J. W. Vandiver.
Franklin.	Pendleton.		3	46.9		77	9	24	19	42									w.	A. A. Martin.
Hardy.	Hardy.		3	50.3		77	9	26	20	40	2.83		2.15	0.0	3	18	9	4	w.	B. D. Hinegardner.
Lost City.	Berkeley.	435	18	50.1	- 4.1	77	9	27	20	48										

TABLE 1.—Climatological data for October, 1909. District No. 1—Continued.

Stations	Counties	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.			Number of cloudy days.
Maryland—Cont'd.																				
Laurel.....	Prince George.....	150	15	50.0	- 5.3	80	8	19	30	47	1.15	- 1.98	0.63	T.	4	18	10	3	.....	Dr. T. M. Baldwin.
Monrovia.....	Frederick.....	630	22	51.5	- 3.4	80	8	28	20	37	0.72	- 2.17	0.29	0.0	6	21	3	7	nw.	J. H. Lawson.
Ocean City.....	Worcester.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	J. Alan Massey.
Pocomoke City.....	Worcester.....	37	16	55.8*	- 3.8	78*	8	33*	30	30*	1.46	- 1.71	0.64	0.0	4	24	3	4	nw.	R. M. Stevenson.
Porto Bello.....	St. Marys.....	38	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Alpheus Hyatt.
Princess Anne.....	Somerset.....	17	16	52.3	- 4.1	80	8	25	30	38	1.65	- 1.70	0.70	0.0	6	13	13	5	nw.	Jas. R. Stewart.
Rockville.....	Montgomery.....	421	2	52.2	- 4.5	78	31	30	30	40	0.92	- 1.53	0.45	0.0	6	20	6	5	nw.	Dr. Geo. E. Lewis.
Salisbury.....	Wicomico.....	23	4	53.5	- 4.6	84	8	27	30	42	1.31	- 1.90	0.62	0.0	8	16	13	2	sw.*	W. E. Downing.
Sanatorium.....	Frederick.....	.....	1	50.8	- 3.3	79	8	30	25	28	2.53	- 1.99	0.99	T.	7	18	1	12	sw.	Dr. W. M. Garrison.
Solomons.....	Calvert.....	20	18	56.3	- 4.5	79	8	36	30	28	0.72	- 2.13	0.37	0.0	6	13	10	8	nw.	Dr. W. H. Marsh.
Sudlersville.....	Queen Annes.....	65	10	52.5	- 3.5	81	8	29	30	42	1.35	- 1.53	0.46	0.0	6	21	4	6	nw.	Jas. E. Higman.
Takoma Park.....	Montgomery.....	320	11	50.8	- 4.6	77	8	30	30	33	1.00	- 1.90	0.53	0.0	5	11	15	5	nw.	L. M. Mooers.
Taneytown.....	Carroll.....	450	10	49.8*	- 2.7	82*	8	20*	30	45*	1.90*	- 0.57	1.45*	0.0	5*	20*	3*	7*	nw.*	R. A. Nusbaum.
Towson.....	Baltimore.....	475	1	51.2	- 2.4	80	8	28	20	40	1.29	- 2.50	0.53	0.0	8	24	1	6	nw.	C. W. Treadwell.
Van Bibber.....	Harford.....	100	12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	H. A. Wroth.
Westernport.....	Allegany.....	1,000	15	49.8	- 2.7	80	9	25	20	46	3.68	+ 1.62	1.92	0.0	5	.....	.....	.....	.....	Prof. O. H. Bruce.
Woodstock.....	Baltimore.....	392	35	51.5	- 2.4	83	7	24	30	41	0.79	- 2.50	0.53	0.0	6	17	6	8	nw.	Rev. A. J. Donlon.
District of Columbia.																				
Washington.....	District of Columbia.....	112	39	53.1	- 3.5	80	8	31	30	42	0.79	- 2.30	0.38	0.0	5	18	7	6	nw.	U. S. Weather Bureau.
Delaware.																				
Delaware City.....	New Castle.....	10	7	53.3	- 3.0	75	7†	32	29	38	0.73	- 1.80	0.73	0.0	3	25	1	5	w.	H. Morton Price.
Dover.....	Kent.....	40	21	53.2	- 5.2	82	7	25	30	40	1.37	- 1.94	0.73	0.0	4	18	7	6	w.	Thos. F. Dunn.
Milford.....	Kent.....	20	25	53.5	- 3.6	78	11	27	30	38	1.50	- 2.53	0.55	0.0	7	21	4	6	w.	C. J. Holzmüller.
Millsboro.....	Sussex.....	20	17	53.1	- 3.5	80	1	26	30	45	1.18	- 1.97	0.30	0.0	8	24	1	6	nw.	Rev. L. W. Wells.
Seaford.....	Sussex.....	40	16	52.7	- 3.5	78	8	26	30	36	1.33	- 1.97	0.69	0.0	4	23	5	3	nw.	E. B. Brown.
Virginia.																				
Culpeper.....	Culpeper.....	450	.....	50.9	- 3.8	78	8	25	29	39	1.07	- 0.79	0.27	0.0	3	13	14	4	nw.	Col. H. C. Burrows.
Dale Enterprise.....	Rockingham.....	1,350	30	51.2	- 3.8	83	8	21	29	48	2.93	+ 0.14	2.40	0.0	2	19	8	4	sw.	Rev. L. J. Heatwole.
Doawell.....	Hanover.....	134	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	R. F. & P. R. R.
Fredericksburg.....	Spottsylvania.....	100	20	53.6	- 3.6	83	22	26	29†	45	0.79	- 1.86	0.27	0.0	7	16	11	4	nw.	S. G. Howison.
Lincoln.....	Loudon.....	500	8	52.6	- 3.6	88	8	21	20	50	1.36	- 0.84	0.0	3	18	8	5	nw.	Dr. George Roberts.	
Mt. Weather.....	Loudon.....	1,726	5	51.8	- 3.7	72	8	29	25	26	1.90	- 1.32	T.	5	15	12	4	nw.	U. S. Weather Bureau.	
Nokesville (near).....	Fauquier.....	350	5	53.4	- 3.7	81	31	30	16†	42	0.89	- 0.58	0.0	3	18	8	5	nw.	Andrew Low.	
Quantico.....	Prince William.....	16	12	52.4	- 3.7	79	22	30	13†	40	0.68	- 0.60	0.0	2	23	0	8	nw.	R. F. & P. R. R.	
Shenandoah.....	Page.....	937	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	N. & W. Ry.
Staunton.....	Augusta.....	1,380	17	52.4	- 3.4	79	8	25	29	38	3.00	- 0.06	2.50	T.	4	22	4	5	sw.	Western State Hospital.
Stephens City.....	Frederick.....	710	17	50.8	- 5.0	82	8†	25	30	45	2.21	- 0.76	1.40	0.0	4	25	1	5	sw.	B. T. Argenbright.
Warsaw.....	Richmond.....	160	17	53.0	- 4.4	80	31	27	30	42	1.27	- 1.90	0.50	0.0	5	21	8	2	n.	C. H. Constable.
Woodstock.....	Shenandoah.....	927	13	52.0	- 3.7	82	10†	26	19†	47	2.47	- 0.31	1.80	0.0	4	17	8	6	w.	Miss A. G. Miley.

\* Precipitation included in that of the next measurement.

\*\* Temperature extremes are from observed readings of the dry-bulb; means are computed from observed readings.

† Also on other dates.

‡ Separate dates of fall not recorded.

§ Data are from standard instruments not supplied by the U. S. Weather Bureau.

|| Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

¶ Estimated by observer.

||| Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.

\*, †, ‡, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.



TABLE 2.—Daily precipitation for October, 1909. District No. 1, North Atlantic States.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Maine.																																		
Bar Harbor.	Coast.			.03	T.							T.	.05			.50	T.	T.	T.			T.	.23	T.	.30	.40		T.	.30	T.			1.81	
Cornish.	Saco.											.04	.30			.13	T.	.01	T.			T.	.38		.14	.15						.02	1.17	
Danforth.	Penobscot.	.04	.10	T.										.10	.10		.50	.05					.25	.10	.20	.30			.35	.05			2.14	
Debaconag.	do.	.10	.10	.02									.10	.03		.58	.03						.58	.16		1.12		.03	.02			2.87		
Eastport.	Coast.			.06	T.	T.								.02	.01	.78					T.			.34	T.	.29	.65			.37	.02		2.54	
Fairfield.	Kennebec.																																	
Farmington.	do.	*	.20										.32			.40								.42		.20							1.54	
Gardiner.	do.		.08	.02									.34	.01		.28	.02	.01					.29	.02	.26	.45							1.88	
Greenville.	do.	.02	.22									.10	.12			.26	T.			T.		.25	.12	.11	.42		.06	.05				1.73		
Houlton.	St. John.												.25										.50		.50								1.25	
Lewiston.	Androscoggin.		.17									.02	.44			.42						.08	.27	T.	.14	.24		.04	.02				1.1	
Madison.	Kennebec.		.11	T.								.02	.37	.05		.23							.34	.02	.17	.33							1.66	
Millinocket.	Penobscot.	.05	.04	.12									*	.20		.14	.17						.22	.16	.06	.33	.27		.04				1.80	
North Bridgeton.	Saco.											.05	.48			.20				.01			.24	.17	.19								1.34	
Orono.	Penobscot.		.01	.03									.06			.58				.04			.35		.25	.54			.57				2.43	
Oquossoc.	Androscoggin.												.05	.22		.22	.12						.60				.92	.13		.02			2.38	
Patten.	Penobscot.				.10								.01	.15		.32		T.				.18	.16	.03	.25	.35		.04	.01		T.	1.50		
Portland.	Coast.											.05	.21			.16			.05	T.		.16	.04		.14	.17							1.03	
Rumford Falls.	Androscoggin.	T.	.05																															
The Forks.	Kennebec.																																	
Van Buren.	St. John.																																	
Winslow.	Kennebec.	.10	.10										.30			.16			.05				.45	*	.64			.08					1.88	
New Hampshire.																																		
Alstead Center.	Connecticut.			.03									.48		.17	.03	.03	.03				.02	.15		.30	.02		T.	T.				1.26	
Benton.	do.	T.		.03	T.								.13		.13	T.	.08	T.	.01			.39	.01	T.	.07	T.		T.	.03	.03			0.84	
Bethlehem.	do.	.09	.35	.04												.17	.05	.17		.10		.06	.23	.06	.12	.18		.03	.03	.10		.06	1.84	
Brookline.	Merrimac.												.27		.08							.35			.40								1.10	
Concord.	do.			T.									.21			.05	T.					.24	.01	.07	.15	.05		T.				.04	0.82	
Durham.	do.												.04	.45									.56			.84							1.89	
Franklin.	do.												.29			.09	T.						.18		.20	.10						.02	0.88	
Grafton.	do.												.47			.01	.05	T.	T.			.01	.22		.21	.03		T.					1.00	
Hanover.	Connecticut.		.01	.01									.39			.13	.05	.01	.02	.01		.20	.10	T.	.18	.02		T.				.02	1.15	
Keene.	do.		.03										.40			.14	.06	.01	T.			.05	.15		.26	.03		T.	.02				1.15	
Nashua.	Merrimac.												.19			.07						.29	.11	.19	.46	T.		T.	.01			T.	1.32	
Newton.	Merrimac.												.09			.07	T.					.52		T.	.29				.02			.03	1.02	
Plymouth.	do.			T.	.06								.77			.12	.09	T.				T.	.37	T.	.12	.09			T.	T.			1.62	
West Ossipee.	Saco.																																	
Vermont.																																		
Bloomfield.	Connecticut.	.01	.38	.03									.06			.19	.02	.20		.06		T.	.28	.06	.02	.19		.01	.04	.13			1.68	
Cavendish.	do.	T.											.61			.12	T.	T.	T.				.33	.01	.19	.05			T.				1.31	
Chelsea.	do.			T.									.22			T.	.06					.08			.05			T.					0.41	
Jacksonville.	do.															.30	1.65		1.40				1.25	.10	.15								4.85	
Manchester.	Hudson.	.22	.06	T.									.34		.19		.14	.11	T.				.65	.10	.19	.18		.17					2.35	
St. Johnsbury.	Connecticut.	.04	.07	.06									.43			.14	T.	.10				.05	.03	T.	T.	.05		T.	.02	T.		.05	1.06	
Woodstock.	do.												.65		.09							.24			.22								1.20	
Massachusetts.																																		
Amherst.	Connecticut.	.02											.07	.54		.01	.07	.01	T.	T.		.24		.16	.11			T.					1.23	
Ashland.	Merrimac.												.07	.31		.07						.38		.15	.13			.02					1.13	
Bakers Bridge.	do.												.08			.34							.41	.18		.15							1.16	
Bedford.	do.												.11			.38			T.				.41	T.	.14	.13			T.			.02	1.19	
Blue Hill.	Coast.												.21			.27			.01			.01	.66	T.	.14	.14		.02					1.46	
Boston.	do.												.17			.16		T.	T.			.17	.27	T.	.25	.04		.01				T.	1.07	
Chestnut Hill.	do.												.17		.21	.10			.04			.53		.27	.23		.03						1.58	
Clinton.	Merrimac.			T.									.30			.15			T.	T.			.50		*	.53		.02				.02	1.52	
Concord.	do.																																	
Fall River.	Coast.												.03		.02	.40						.35	.20		.45	.17		.02	.12				1.76	
Fitchburg.	Merrimac.												.43			.11	T.		T.			T.	.27	.05	.44	.04		T.					1.34	
Framingham.	do.												.07		.28	.05		.01				.36		.28			.03						1.09	
Haverhill.	do.												.06		.08							.58		.10	.14			.01					0.97	
Hingham.	Coast.												.12		.22							.56		.60			.06						T.	1.56
Hyannis.	do.												.27		.56								.47			2.00		.31					3.61	
Jefferson.	Merrimac.												.43		.15				.58			*	*	.87									2.03	
Lake Cochituate.	do.												.07		.32				.02			.35		.27		.03							1.06	
Lawrence.	do.												.07		.19	.02		T.	T.			*	.56	*	.11	.09						T.	1.02	
Leominster.	do.												.01	.13		.10	T.	T.	T.			.09	.25	.04	.64	.03		T.				T.		

TABLE 2.—Daily precipitation for October, 1909. District No. 1—Continued.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Connecticut—Cont'd.																																		
Hawleyville.....	Housatonic.....											.30			.16								.30		.40								1.16	
Lake Konomoc.....	Coast.....											.15			.65							.55		.25									1.60	
New Haven.....	do.....			T.							.01	.03		.02	.08	T.		T.				.16		.30	.14	.01		.01	T.				1.76	
New London.....	do.....											.20			.35								.80		.21								1.67	
North Groavenordale.....	do.....				.03							.25			.25	.05							.42		.15								1.15	
Norwalk.....	do.....											.38		*	.10							*	.10	*	*	.36		.03					0.97	
Southington.....	do.....			T.								.80			.10								.30		.30	T.							1.50	
South Manchester.....	Connecticut.....											.62			.10							*	.29	*	.62								1.63	
Storrs.....	Coast.....																																	
Torrington.....	Housatonic.....											.60			.10	T.	T.		T.				.30	T.	.32	.01							1.33	
Voluntown.....	Coast.....				.10							.20			.37								.62		.20	.10		.08						1.67
Wallingford.....	do.....											.58			.14								.25	T.	.41								1.32	
Waterbury.....	Housatonic.....				T.							.28			.08								.32		.46		.02	T.					.01	1.17
West Simsbury.....	Connecticut.....											.71			.06	T.		T.					.41	*	.30			T.		T.			1.48	
New York.																																		
Addison.....	Susquehanna.....	.03	.04									.21	.64		T.	T.		T.	.13			.07	.35	.12	.32			T.	.03				1.94	
Albany.....	Hudson.....	T.	T.									.26		.07		.02	.05	.01				.14	.01	.12	.14	.01		T.	T.				0.83	
Amsterdam.....	Mohawk.....	T.		T.								T.				.06	T.	.33	.05			.22	T.	T.	.30		T.	T.					0.90	
Athens.....	Hudson.....	T.		T.								.42			.06	T.	T.	T.				T.	.02	T.	.32	.06		T.	T.		.02			0.90
Ballston Lake.....	Hudson.....	T.		T.								.04			.02	.02	.04	.02	T.			T.	.14		.13	T.		T.	T.			T.	0.41	
Bedford.....	Coast.....											.38			.12		T.					T.	.13	.04	.04	.08		T.					1.15	
Binghamton.....	Susquehanna.....	.05	.01	.02								.86			T.	.01	.02		.01	.01			.31	.04	.12	.03		T.	.04	T.			1.53	
Bouckville.....	Susquehanna.....	.04	.12	.15	.07							.57			.08	.07	.08	.10	.09			.15	.17	.02	.27			.03		.07			.02	2.10
Boyd's Corners.....	Hudson.....											*	.32		*	.14						*	.26	*	.36								1.23	
Carmel.....	do.....											.35			.07	T.	T.		.01			.01	.01	.25	.06			.06					1.08	
Chatham.....	do.....	.01	.04		T.							.90		.06		.02	.09	.12				.45	.07	.36	.06			.26	.09				0.87	
Cooperstown.....	Susquehanna.....			.08								.40				.30																	2.56	
Corinth.....	Hudson.....											.40				.30																	1.05	
Cortland.....	Susquehanna.....	.06	.03	.06								.23	.45		.14	.03		.05	.02			.04	.45	.04	.28		.04		.03	.01			2.96	
Cutchogue.....	Coast.....											.17			.32	T.		T.				T.	.43		.45	.25		.12					1.74	
De Ruyter.....	Susquehanna.....	T.	.10	.23	.05	T.				*	.05	.67	.06		*	.08	T.		.10	.15	*		.15	.30	.10	.30	T.	.05		.12			2.51	
Easton.....	Hudson.....	.06												.54									.34		.06								1.00	
Elmira.....	Susquehanna.....	.05										1.02			.05							.18	.29		.22								1.81	
Fort Hunter.....	Mohawk.....											.10						.30	.40				.60		.20			T.					1.60	
Fort Plain.....	do.....	T.	T.	T.	.17							.40				.02	.04	.24	.08			.08	.29	.02	.31	T.		T.	.06		.02		1.73	
Glens Falls.....	Hudson.....	.04									*	.25			T.		.05	.07				.12	.23		.10			.03		.03			0.92	
Gloversville.....	Mohawk.....	.06		.10	.03							.13			.06	.04	.20	.06				.30	.12		.18			T.					1.28	
Greenfield Center.....	Hudson.....	.05										.20			.10	.05						.15	.22		.12	.07							0.96	
Greenwich.....	do.....			.03								.13			.03	T.	.01	.01	.01			*	.10		.20	.01		.01	.02				0.56	
Griffin Corners.....	Delaware.....											.20		*	.01	.02						*	.26	*	.34	.04		*	.10				0.97	
Hancock.....	do.....																																	
Haskinville.....	Susquehanna.....	.15										.17	.65		.10		.13		.23			.10	.42	.18	.20			T.					2.33	
Hosick Falls.....	Hudson.....	T.	.06		T.							.18			.11		.09	.10	.07				.37	.13	.32			T.					1.43	
Indian Lake.....	do.....											.20			.10	.20						.20	.30	.30									1.80	
Jeffersonville.....	Delaware.....			T.	T.							.50			.07	.02	T.	T.				T.	.21	.35	T.	T.	.07		.64	T.			1.26	
Lake Pleasant.....	Hudson.....											.35			.05						.10	.30	.40	T.									1.20	
Liberty.....	Delaware.....							.20						.40								.23	.05	.41	T.		.10	T.					1.39	
Little Falls.....	Mohawk.....	.06	T.	.16								.48				.03	.13	.22				.42	.12	.34				.24					2.20	
Mohawk Lake.....	Hudson.....										*	.65		*	.09	T.						.40	.50	.53									1.22	
Morehouseville.....	Mohawk.....	.42	.06	.07				.12				.35				.40	.50	.53				.40	.55										3.40	
Mount Hope.....	Coast.....											.45			.30								.25	.15	.20			.15					1.50	
Newark Valley.....	Susquehanna.....	.09	T.	.01								.80	.66		.14	.02		.04			*	.33	.28	.03	.24		.05						2.69	
New Berlin.....	do.....	.02	.10	.03	T.							.92			.03	.07		.06				.38	.06	.34	.09								2.10	
New Lisbon.....	do.....		.07	.08								.92			.05	.03		.04				.30	.32	.12	.32			.08	.04				2.47	
New York City.....	Coast.....											.02	.18		T.	.11	T.		.01			.02		.31	.04		.05						0.74	
North Creek.....	Hudson.....											.07			.12		.08					*	.28	1.60							.50		5.35	
Northville.....	do.....											.19			.09		.20					.52		.12									1.12	
Norwich.....	Susquehanna.....											.28			.14	.02	T.	T.	T.			.01	.19		.14	.03	T.		.06	.01			1.88	
Oneonta.....	do.....	.04	T.									.50				.08		.04				.20	.23	T.	.27	.17		.02	T.					



TABLE 2.—Daily precipitation for October, 1909. District No. 1—Continued.

Stations.	River basins.	Day of month.																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Pennsylvania—Cont'd.																																	
Kennett Square.....	Coast.....											.55			.33				T.			.21		T.									1.09
Lansdale.....	Schuylkill.....											.32			.13							.14	.05	.21									0.85
Lawrenceville.....	Susquehanna.....	.25										T.	.85			T.			.20			.12	.28	.10	.25								2.05
Lebanon.....	do.....				T.							.30	.11			.05	.02		.11			.04	.09	.75				.01					2.48
Le Roy.....	do.....	.04	.02	.01								.42	.80		.01	.02	.01		.15	.01		.04	.10	.20	.18								2.01
Lewisburg.....	do.....											.32	.90			.01			.15	.02		.09		.63	.04								2.16
Lock Haven.....	do.....											1.22			.07		T.		.27			.46		.37				T.					2.39
Marion.....	Potomac.....											1.57						.19			.06		1.16										2.98
Mauch Chunk.....	Delaware.....				.03							.70	.86		.05			.15			.05	.19	.58										2.61
Mifflintown.....	Juniata.....											1.20	.80		.01			.19			.10	.15	.78	.01									3.24
Milford.....	Delaware.....														.03	.03		.07			.13	T.	.17	.26	.01		.01						0.70
Montrose.....	Susquehanna.....											.22	.48					.05			T.	.19	.10	.18									1.22
Mountain House.....	Juniata.....											1.90	.22					.26			.16		1.06										3.60
New Germantown.....	Susquehanna.....																					.07	.04	.26	.03								1.26
Ottaville.....	Delaware.....											.62			.12			.09			.07	.04	.26	.03				.03					0.83
Philadelphia (1).....	do.....											.11	.03		T.	.27		.02			.01	.02	.33	T.				.04					0.94
Philadelphia (2).....	do.....											.10	.05		T.	.30		.03	T.		T.	.04	.05	.31	T.			.05	.01				0.81
Philadelphia (3).....	do.....											T.	.19			.22		.02	T.		T.	.05		.31				.02					1.98
Pocono Lake.....	do.....											T.	1.06				T.				T.		.85		.07								1.05
Point Pleasant.....	do.....											.30			.12			.08			.07	.26	.12	.05				.05					3.48
Pottsville.....	Schuylkill.....											2.03	.02		.04			.14			.21	.8	.76										1.59
Reading.....	do.....											1.47			.04			.15			.08	.26	.11	.11				.07					2.21
Renovo.....	Susquehanna.....				T.							1.67	.01		.04	.01		.15	T.	.07		.08	.20	.22									1.86
Scranton.....	do.....			T.								.15	.49		.03			.12			.16	.01	.39	.02			T.						1.31
Seisholtzville.....	Schuylkill.....											.26	.63		T.	.03		.16	.01		.06	.30	.54	.06									2.05
Selinsgrove.....	Susquehanna.....											.10	.34			.20		.03			.05	.07	.05	.15									0.99
Shawmont.....	Schuylkill.....											.38			.17			.09			.40	.18											1.13
Smiths Corners.....	do.....											.02	.41		.15			.09			.05	.15	.24	.03									1.18
Spring Mount.....	do.....											1.43			.16		.01	.19	.01		.45	.17	.58	.06				T.					3.06
State College.....	Susquehanna.....											.81	.09		T.		T.	.13			.04	.13	.13	.15				T.					2.50
Towanda.....	do.....	T.		.02								.42	.70			.09		.18			.30	.21	.12	.13									2.21
Wellsboro.....	Coast.....			.06								.17	.43			.23		.02			.03	.05	.12	.03				.03					1.11
West Chester.....	do.....											.42	.70			.09		.18			.30	.21	.12	.13									2.21
Wilkes-Barre.....	Susquehanna.....											1.67			.08			.20			.18	T.	.44										2.57
Williamsport.....	do.....											1.30			.03	T.		.09			T.	.30	T.	.33									2.05
New Jersey.																																	
Asbury Park.....	Coast.....				.06							*	.42		*	.30		.03			.01	.09	*	.73			.05						1.69
Atlantic City.....	do.....											.25	.29		.02	.58	T.	.01			.04	.13	.15	.32			.03						1.82
Bayonne.....	do.....											*	.15			.16	T.	.03			.04		.02	.34			.04	T.					0.78
Belvidere.....	Delaware.....											*	.55			.03		.13			*	.12	*	.29									1.12
Bergen Point.....	Coast.....											*	.33		*	.13		*	.06		*	.19	*	.24	.04			T.					0.96
Boonton   .....	Passaic.....											.20			.40			T.			.11	.70	T.				T.						1.41
Bridgeton   .....	Coast.....			T.								*	.22		*	.30		.04			.06		.36	.07			.06						1.11
Burlington   .....	Delaware.....											.33			.32			.01			.05	.01	.25	.13			T.						1.22
Canton.....	Coast.....			.08								.52	.28		T.	.36		.01			.05	.01	.25	.13			T.						1.61
Cape May City.....	do.....			T.								*	.65			.54		.03			.08	.03	*	.37			.02						1.72
Cape May C. H.....	do.....											.51			.04		.10				*	.10	*	.45				T.					1.10
Charlotteburg.....	Passaic.....											*	.51		*	.04		.10			*	.10	*	.30	.10		*	.10					1.28
Chatham   .....	do.....											*	.33		*	.36	T.	T.			T.	.05	.72										1.48
Clayton.....	Coast.....											*	.22		*	.15		.06			*	.12	*	.57			.10						1.22
College Farm.....	do.....				T.							*	.50		*	.08	.01	.09			T.	.10	.04	.39				T.					1.21
Culver's Lake.....	Delaware.....											.35			.08		T.	.08			T.	.20	.28	.08			.04						1.11
Dover.....	Passaic.....											*	.13		*	.14		.08			T.	*	.05				*	.08					0.40
Elizabeth.....	Coast.....											*	.29		*	.14		.08			.04	.09	T.	.24			.05						0.93
Englewood.....	do.....											.35			.32			.01			T.		.55	.04									1.27
Flemington.....	do.....											.05	.32		*	.37	T.	.01			T.	.11	.04	.31			.04						1.25
Freehold.....	Delaware.....											.37			.43		T.				.03	.08	*	.61			.02						1.51
Friesburg.....	Coast.....											.17			.26		.06			*	.03	.15	.36	.11			.03						1.17
Haddonfield.....	Delaware.....											.16			.24		.03			*	.15	*	.62				.07						1.27
Hammonton.....	do.....											.																					

TABLE 2.—Daily precipitation for October, 1909. District No. 1—Continued.

Stations.	River basins.	Day of month.																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Maryland—Cont'd.																																	
Bachman's Valley.....	Coast.....											.48			T.	T.			T.			.09		.19				T.					0.76
Baltimore.....	do.....											.70			T.	.08			.01			T.	T.	.20	.04			T.	T.				1.03
Cambridge.....	do.....											.42			.04	.35	.05				.03			.33									1.22
Cheltenham.....	Coast.....											.50	.08			.22									.42								1.22
Chester.....	do.....											.55	.20			.39			T.			T.		.15	.30				.06				1.65
Chestertown.....	do.....											1.35			.04	.02			.06			.08		1.61									2.16
Cheswille.....	Potomac.....											1.30			.08	T.			.10			.15		.84									2.47
Clear Spring.....	do.....											.57				.36						T.		.10	.25				T.				1.28
Coleman.....	do.....																																
College Park.....	do.....																																
Cumberland.....	do.....											.45	1.05				.05		.20	.05		T.	.10	.07	1.05								3.62
Darlington.....	Coast.....											.94	.15			.21						.04		T.	.19	.09		T.	.02				1.64
Denton.....	do.....											.11	.33			.49			T.			T.	.06		.34								1.33
Easton.....	do.....												.42			.47						.17		.40									1.46
Emmitsburg.....	Potomac.....											1.46			.12			.10				.09	.56										2.33
Fallston.....	Coast.....											.06	.32			.16	.02		.01			.02		.04	.24	.02		T.	.03				0.92
Frederick.....	Potomac.....											.56	.02		.02	.10	.01		.02	T.		.12	.02	.19	T.								1.09
Frostburg.....	do.....											2.20			.07		T.		.31			.13	.24	1.12	T.				T.				4.07
Great Falls.....	do.....												.38			.13																	0.51
Green Spring Furnace.....	do.....											1.41			.06			.06				.19		.84									2.56
Keedysville.....	do.....											1.52	.10			.02			T.	.03		.10		.52									2.29
Laurel.....	Coast.....											.63			T.	.26	.02		T.						.30				T.				1.15
Monrovia.....	Potomac.....											.13	.29		T.	.07			T.	.04		.07		.12	T.			T.					0.72
Ocean City.....	Coast.....																																
Pocomoke City.....	do.....											.32				.64	.02		T.					.48									1.46
Porto Bello.....	do.....																																
Princess Anne.....	do.....											.52			.15	.70	T.		.07				.10	.11				T.					1.65
Rockville.....	Potomac.....											.23	.45		.02			.14						.07	.01			T.					0.92
Salisbury.....	Coast.....					10						.62			.18	.08	.06			.05			T.		.18						.04		1.31
Sanatorium.....	Potomac.....											.42	.99		.06		.15		.10			.11		.70	T.				T.				2.53
Solomons.....	Coast.....											.05	.04		.03	.21	.02		T.			T.		.37	T.				T.				0.72
Sudlersville.....	do.....					T.						.20	.28			.38			T.	.02		T.	T.		.46	.01			T.	T.			1.35
Takoma Park.....	do.....												.53			.20	.05							.20	.02				T.	T.			1.00
Taneytown.....	Potomac.....											1.45				.13			.04			.13		.13									1.90
Towson.....	Coast.....											.02	.22	.71		.14						.02	T.	.02	.13	.03		T.	T.				1.29
Van Bibber.....	do.....																																
Westernport.....	Potomac.....																																
Woodstock.....	Coast.....											T.	.08	.53		T.		.09	T.	T.	T.		.01		.05	.03	T.	T.	T.				3.68
District of Columbia.																																	
Washington.....	Coast.....											.38			T.	.20	T.		T.			T.		.19	.01			.01	T.				0.79
Delaware.																																	
Delaware City.....	Coast.....												.16			.30			T.			T.	T.		.27				T.				0.73
Dover.....	do.....											.18			.41			*				.05		.73	T.				T.				1.37
Milford.....	do.....												.55		T.	.34			.02	.01		.03	.16		.39								1.50
Millsboro.....	do.....					T.						.30	.05		.20	.30	.02		.05			T.		.11	.15			T.					1.18
Seaford.....	do.....											T.	.69		.03	.29			T.			T.			.32								1.33
Virginia.																																	
Culpeper.....	Rappahannock.....											.71				.20								.16									1.07
Dale Enterprise.....	Shenandoah.....											2.40							T.			T.		.53									2.93
Dorwell.....	Coast.....																																
Fredericksburg.....	Rappahannock.....											.20			.08	.09	.02		T.	.03				.10	.27								0.79
Lincoln.....	Potomac.....											.84				.11	.07							.45									1.36
Mt. Weather.....	do.....											1.32			T.	.11		.03				.06		.38									1.90
Nokesville.....	do.....												.58			.21	T.							T.	.10				T.				0.89
Quantico.....	do.....											.60							T.					.08									0.68
Shenandoah.....	Shenandoah.....											1.53												.60									2.13
Stanton.....	do.....											2.50			.04	.01			T.					.45									3.00
Stephens City.....	Potomac.....											1.40											.18		.58	.05							2.21
Warsaw.....	Rappahannock.....												.50		.08		.22		T.			T.		.45					.02				1.27
Woodstock.....	Shenandoah.....											1.80			T.							.11		.36	.20								2.47



TABLE 3.—Maximum and minimum temperatures at selected stations, October, 1909. District No. 1, North Atlantic States.

Date.	Maine.												Massachusetts.												R. I.				Connecticut.			
	Eastport.		Greenville.		Orono.		Portland.		Rumford Falls.		Van Buren.		Concord, N. H.		Amherst.		Boston.		Middleboro.		Nantucket.		Providence, R. I.		Cream Hill.		Hartford.					
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.				
1...	62	50	57	35	70	45	64	47	60	44	.....	63	42	59	42	64	50	65	36	65	56	62	48	64	46	62	48					
2...	56	48	48	43	63	45	59	45	56	46	.....	60	47	62	48	64	51	63	39	62	54	61	49	65	41	63	49					
3...	55	46	54	41	58	44	59	49	58	44	.....	60	49	61	44	58	52	61	34	59	53	61	48	62	43	64	48					
4...	56	47	59	40	60	41	60	49	60	44	.....	63	42	61	44	60	50	63	32	59	50	62	46	64	44	62	48					
5...	70	46	67	35	74	38	72	44	68	42	.....	72	33	73	35	70	47	69	29	64	51	68	45	66	41	69	40					
6...	70	50	68	46	73	45	69	48	70	49	.....	73	39	75	38	76	52	75	32	71	54	76	47	72	39	73	41					
7...	73	53	69	43	76	48	74	52	72	51	.....	76	46	80	38	75	55	77	34	71	55	76	51	73	46	78	44					
8...	73	50	76	37	76	40	74	50	74	44	.....	79	42	79	44	70	56	77	39	68	55	75	52	75	49	76	49					
9...	78	54	77	40	83	43	81	54	77	50	.....	83	44	84	43	77	58	84	37	73	55	75	51	80	52	81	49					
10...	63	52	76	41	83	44	71	56	76	46	.....	83	42	85	44	70	57	83	39	76	56	80	53	81	60	82	48					
11...	57	53	54	48	81	50	56	53	58	48	.....	58	44	70	42	58	53	66	38	59	55	61	47	75	48	76	47					
12...	62	53	57	53	67	50	59	54	58	52	.....	63	47	72	46	74	55	72	56	67	56	74	52	64	51	70	50					
13...	60	46	53	38	63	43	54	44	51	39	.....	53	36	77	31	56	42	65	31	58	48	53	39	53	30	53	38					
14...	50	43	47	32	59	37	55	38	52	42	.....	56	34	56	30	60	40	57	21	56	45	57	36	57	33	56	34					
15...	55	46	52	33	56	40	53	47	56	42	.....	57	36	56	36	56	44	54	49	56	51	56	43	55	37	57	43					
16...	53	40	47	36	55	36	55	38	54	34	.....	50	33	52	32	56	41	53	33	55	46	54	38	47	36	52	39					
17...	50	39	44	35	52	32	51	36	47	39	.....	51	39	54	37	55	41	60	31	54	47	54	40	52	32	54	39					
18...	47	37	43	36	48	35	53	38	46	38	.....	49	28	50	32	52	40	58	32	53	46	51	40	49	33	50	39					
19...	42	33	39	33	46	34	45	36	40	37	.....	45	33	52	28	51	36	52	29	49	44	51	33	48	30	51	36					
20...	41	33	41	31	49	33	48	31	46	32	.....	53	24	58	25	55	33	52	21	48	41	53	30	53	24	56	30					
21...	46	32	45	32	50	24	50	31	46	27	.....	52	22	52	24	58	37	60	21	57	42	58	31	49	32	56	28					
22...	54	46	53	36	60	40	60	49	56	44	.....	59	46	58	44	62	50	65	49	62	52	62	46	55	43	61	48					
23...	57	47	48	41	59	42	56	45	51	42	.....	54	40	55	43	60	47	60	40	57	50	59	40	51	40	55	42					
24...	49	46	41	38	51	46	45	42	46	41	.....	45	41	46	40	51	44	56	45	58	51	45	42	43	37	46	41					
25...	46	38	40	32	45	35	48	34	43	36	.....	48	36	54	32	54	40	54	42	53	45	54	40	46	32	49	39					
26...	52	36	45	32	53	32	56	33	49	38	.....	51	33	62	31	62	38	60	27	58	45	62	38	60	28	62	35					
27...	56	43	54	32	62	30	56	40	57	32	.....	65	28	65	38	70	49	67	39	60	52	67	46	63	37	65	46					
28...	50	38	41	34	58	39	50	36	46	37	.....	49	26	46	36	53	40	55	42	55	42	50	37	54	30	49	39					
29...	38	34	35	29	41	33	41	32	37	34	.....	38	33	41	30	44	34	43	29	42	37	42	31	35	25	40	32					
30...	34	29	34	25	43	30	44	31	36	28	.....	45	26	51	36	51	33	52	25	46	36	52	29	45	25	50	32					
31...	44	28	48	18	53	19	46	29	48	26	.....	45	25	55	34	50	38	57	18	57	41	57	40	55	28	64	37					
Mns	54.8	43.1	52.0	36.3	60.3	38.3	56.9	42.2	54.6	40.3	.....	58.0	37.0	60.7	36.7	60.4	45.3	62.3	34.5	59.0	48.7	60.3	42.2	58.4	37.8	60.7	41.2	60.7	41.2			

Date.	New York.												Pennsylvania.												New York.				Pennsylvania.			
	New Haven, Conn.		Addison.		Albany.		Binghamton.		Cooperstown.		Indian Lake.		New York.		Clearfield.		Easton.		Everett.		Harrisburg.		Philadelphia.		Scranton.		Wellsville.					
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.				
1...	63	48	57	45	58	50	52	46	50	46	56	41	62	50	60	41	63	45	58	48	61	48	67	51	56	49	56	42				
2...	64	47	57	41	57	49	54	44	56	40	54	39	59	50	56	39	60	46	59	47	63	45	65	51	56	46	59	40				
3...	66	48	55	48	60	47	54	49	56	48	56	44	63	51	58	40	63	50	58	37	60	54	64	53	55	50	54	46				
4...	65	49	61	46	61	40	61	42	55	40	60	37	63	56	59	46	64	51	63	45	61	52	62	56	61	45	59	45				
5...	68	44	70	35	68	38	65	37	60	34	70	27	66	52	73	52	60	43	67	35	68	49	70	57	65	38	69	31				
6...	73	46	78	35	72	41	68	38	62	34	67	32	71	51	74	34	68	42	71	36	72	45	76	55	71	38	71	32				
7...	75	46	79	36	75	44	72	39	65	36	75	30	74	54	81	40	74	41	77	34	74	46	78	56	73	40	77	33				
8...	74	55	83	38	77	47	77	43	67	36	83	37	75	59	83	34	74	40	80	35	79	47	77	58	77	45	79	32				
9...	76	51	85	41	77	49	80	46	72	40	85	38	73	58	85	38	75	48	80	38	78	53	77	58	82	49	82	36				
10...	78	51	82	42	79	52	79	44	73	42	80	36	74	56	79	41	70	53	75	39	73	52	76	55	79	47	79	38				
11...	69	49	70	55	72	53	66	54	70	52	77	38	71	59	64	46	70	57	73	54	69	55	74	60	67	56	67	40				
12...	71	49	62	38	69	45	56	37	62	41	68	49	66	49	54	40	66	50	55	43	49	42	68	48	59	40	62	34				
13...	51	37	43	29	52	35	41	32	41	30	55	27	49	39	41	25	58	34	46	28	48	37	52	42	46	33	46	29				
14...	57	35	58	23	57	35	54	32	52	30	53	30	58	39	53	22	56	30	55	26	55	37	56	40	55	31	58	23				
15...	57	45	54	34	55	40	49	38	47	38	47	35	58	49	55	26	56	45	50	31	54	43	58	50	51	43	50	32				
16...	52	40	56	37	53	38	48	38	45	34	45	28	52	45	53	25	51	40	47	39	50	41	55	44	49	40	49	34				
17...	54	39	47	36	50	41	46	37	44	37	42	34	53	40	54	29	53	37	53	30	55	37	57	41	50	38	48	32				
18...	50	40	45	31	49	38	41	34	40	35	43	28	47	43	60	31	51	33	48	39	45	39	48	44	43	35	45	29				
19...	53	36	46	29	48	35	43	38	40	35	35	29	54	41	54	25	54	34	50	30	51	39	56	42	46	37	45	29				
20...	53	31	62	24	55	29	52	32	46	32	47	22	52	39	63	28	53															

TABLE 3.—Maximum and minimum temperatures at selected stations, October, 1909. District No. 1—Continued.

Date.	New Jersey.								Martinsburg, W. Va.		Maryland.								Washington, D. C.		Millsboro, Del.		Virginia.					
	Asbury Park.		Atlantic City.		Hightstown.		Newton.				Baltimore.		Darlington.		Frederick.		Westernport.						Culpeper.		Fredericksburg.		Staunton.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.		
1...	66	47	67	51	67	45	62	43	68	50	69	50	66	43	68	48	67	48	70	45	72	44	72	38	74	39		
2...	61	46	63	45	62	40	56	42	65	40	67	46	65	39	67	42	63	43	66	44	78	42	68	35	70	38		
3...	64	48	64	48	63	40	64	48	65	41	63	53	61	47	64	44	69	36	63	48	66	43	67	37	70	43		
4...	62	54	65	51	63	50	65	46	66	44	65	53	.....	.....	67	45	65	34	66	49	66	44	61	41	67	42		
5...	64	53	66	55	70	46	72	37	68	42	68	48	69	46	69	40	70	40	69	44	69	47	68	48	69	43		
6...	67	49	70	48	76	39	78	40	72	42	75	52	73	43	74	41	74	42	74	44	76	41	71	44	76	44		
7...	71	50	76	50	77	41	80	39	71	40	74	52	76	43	78	41	77	37	76	44	80	42	76	39	80	42		
8...	69	54	71	54	80	44	82	44	76	40	80	54	76	45	81	43	78	38	80	46	76	45	78	39	80	44		
9...	70	53	69	54	80	44	82	44	77	42	76	55	75	48	80	46	80	38	78	50	73	48	77	44	79	46		
10...	69	52	70	54	79	43	80	44	73	38	70	55	70	46	71	45	77	42	75	49	71	54	72	42	73	45		
11...	66	60	69	62	76	54	74	55	65	50	73	60	69	59	69	55	71	51	73	58	76	59	68	53	72	55		
12...	68	56	69	47	71	50	67	42	50	45	63	53	65	47	61	45	53	43	66	45	73	51	63	41	67	42		
13...	63	35	51	39	58	31	51	29	51	43	54	41	51	31	53	33	48	33	55	36	56	36	56	28	58	28		
14...	57	34	58	38	60	28	54	26	59	40	58	41	55	31	59	33	59	27	55	36	57	30	53	32	54	30		
15...	59	49	59	48	59	49	59	42	57	39	58	47	56	43	58	42	54	35	60	46	61	44	58	42	61	47		
16...	56	41	52	4	54	41	51	35	56	36	54	42	52	40	56	43	48	40	53	40	58	40	57	42	60	42		
17...	55	36	59	42	57	35	54	34	58	35	58	41	57	34	59	33	57	27	57	35	60	34	60	29	63	30		
18...	50	36	55	41	49	30	46	32	55	35	56	45	52	34	54	39	50	40	60	43	68	34	66	44	72	45		
19...	55	36	54	38	56	30	54	32	54	36	57	42	54	36	58	38	60	30	56	40	56	36	55	40	60	42		
20...	51	35	52	35	55	26	55	23	55	27	53	37	53	28	57	28	59	25	58	32	60	28	58	28	62	31		
21...	57	35	61	45	60	28	54	25	64	36	65	42	59	33	61	36	55	39	65	39	66	31	56	38	66	39		
22...	68	52	71	50	68	49	55	45	72	43	74	53	70	49	74	49	71	48	76	53	67	54	77	50	83	53		
23...	61	45	58	45	57	40	51	41	51	47	58	49	60	42	55	45	62	44	61	48	63	43	64	44	69	45		
24...	56	46	56	43	50	45	44	39	47	42	49	41	51	41	47	41	49	40	48	42	53	44	52	40	55	44		
25...	53	37	52	39	54	36	54	33	54	34	55	39	52	36	56	34	60	33	54	37	55	37	54	29	58	35		
26...	65	38	60	43	65	30	62	30	67	30	68	38	65	31	69	33	68	28	67	35	69	31	66	27	70	30		
27...	65	43	62	48	68	37	65	39	65	30	71	42	68	37	68	38	65	35	71	37	72	40	68	30	74	34		
28...	55	40	53	37	59	34	57	32	47	39	52	41	57	36	58	38	51	33	50	39	59	34	59	31	66	34		
29...	45	30	47	32	46	30	45	29	50	37	50	38	47	31	50	35	50	31	49	34	51	30	51	28	53	26		
30...	54	30	54	30	54	26	57	27	55	27	57	35	54	30	57	28	65	26	58	31	58	26	57	25	61	26		
31...	70	37	66	45	73	29	70	28	76	24	78	41	74	30	77	36	76	30	79	37	79	34	75	37	81	36		
Mean	61.0	43.8	61.3	45.2	63.4	38.4	61.3	36.9	61.6	38.6	63.5	46.0	61.8	39.3	63.7	40.5	62.9	36.6	64.1	42.1	65.9	40.3	64.1	37.7	67.8	39.4		



## Climatological Data for October, 1909.

## DISTRICT No. 2, SOUTH ATLANTIC AND EAST GULF STATES.

CHARLES F. VON HERRMANN, District Editor.

## METEOROLOGICAL SUMMARY FOR OCTOBER, 1909.

Generally speaking, unusually bright, pleasant weather prevailed in the South Atlantic and east Gulf States during the month of October. The temperature was moderately below the normal over most of the district, the rainfall was small except at a few stations, the sunshine was abundant, and the conditions generally ideal for all forms of outdoor occupation. The average number of clear days was very large, ranging from 20 in Florida to 24 in Georgia and Alabama, and there were only 4 or 5 days with rain. The rainfall occurred in brief periods with long intervals of fair weather, and at many places drought continued during the entire month. It must be considered rather remarkable that in Florida six stations received no precipitation whatever during October.

Nevertheless there were some abnormal meteorological features worthy of special note. A very severe West Indian hurricane passed near the southern extremity of Florida on October 11, causing dangerous gales, heavy rains, and a phenomenally low atmospheric pressure from Key West to Miami, Fla. The damage to property in Monroe and Dade counties, Florida, is said to have approximated several million dollars; hundreds of houses were destroyed and about thirteen lives were lost. The barograph at Sand Key, where the Weather Bureau office was destroyed, showed a pressure of 28.36 inches at 10:40 a. m., on October 11. On the same day the lowest atmospheric pressure was observed at all stations in the district, though the pressure outside of Florida did not fall below 29.66 inches at Charlotte, N. C.

The second noteworthy feature for the month was the series of unusually destructive hailstorms that occurred in the central-northern portion of Georgia on the afternoon and evening of October 14. These local disturbances formed in the southeast quadrant of a barometric depression central near Marquette, Mich., with a pressure of 29.30 inches on the morning of October 14, and advanced from the Alabama boundary line directly eastward, extending from Rome south to Jonesboro and east to Athens, Ga. The storm was especially severe at Atlanta; very large hailstones fell and the damage to property was conservatively estimated to have exceeded \$50,000.

The first killing frosts of the season occurred at many of the more elevated stations in the South Atlantic States on October 13. The advance of the marked area of high atmospheric pressure from the upper Lakes to the south Atlantic coast on October 20, when the barometer rose above 30.50 inches (maximum pressure 30.58 inches at Lynchburg, Va.), did not bring with it so pronounced a decline in temperature as the more moderate high pressure area that descended over the district on October 25. On that date killing frosts were quite general with temperatures a few degrees below freezing in the middle and mountainous sections of all States in the district.

## TEMPERATURE.

The mean temperature for the month was below normal over the greater portion of the district, except in Alabama and Mississippi, where a slight excess in temperature occurred. The deficiencies were least in Florida and gradually increased toward the north. In eastern North Carolina at a few individual stations the departure exceeded 5°, but on the average for the district the departure was about 2°. In Virginia, North Carolina, and South Carolina the month was as cold as any October for which there is record. October in 1895, 1896, and 1907 rank nearly equal with the present month in low mean temperature. A slight excess in the monthly means, exceeding

2° at a few stations, occurred in the central and southern portions of Alabama and Mississippi and in western Florida. The monthly mean temperatures ranged from 77.4° at Key West, Fla., and 71.7° at Biloxi, Miss., to 48.0° at Hot Springs, Va., the only station at which the October mean was below 50°.

The month was one of marked extremes in temperature. In southern portions of the district the highest temperatures occurred generally between the 1st and 5th, farther north between the 7th and 10th. The maximum exceeded 90° in all States except Virginia and North Carolina. In Georgia the highest temperature for the month, 98° at Bainbridge (which is also the highest for the district), has been exceeded in October only once since 1891, namely in 1901, when 101° was recorded. On the other hand, the minimum temperature in all States except Florida was a few degrees below freezing. At Hot Springs, Va., the lowest temperature was 18° on October 29. In Georgia the minimum, 24° at Clayton on the 25th, was the lowest recorded with the exception of 21° registered in 1892. Although heavy to killing frosts occurred at many stations on October 13, the most pronounced cool wave spread over the district on the 25th, when frosts were more general and extended into northern Florida with light frosts at eight stations.

## PRECIPITATION.

The precipitation for October, 1909, as shown by the State averages, was below the normal in all the South Atlantic and east Gulf States, the deficiencies being least in South Carolina and Mississippi and greatest in Florida. Moderate excesses in rainfall occurred in limited portions of central South Carolina and in northern Georgia, and rather marked excesses in the extreme southern and in the western portions of Florida. The distribution of precipitation in Florida was most irregular. Under the influence of the West Indian hurricane of October 11 very heavy rains fell in the southern portions of the State, namely, in Lee, Dade, and Monroe counties, the largest monthly total rainfall being 21.08 inches at Miami; Key West received 16.87 and Hypoluxo 10.63 inches. There was also a region of excessive rainfall in extreme western Florida and southern Mississippi, Pensacola receiving 8.13 inches and Pascagoula, Miss., 8.17. Yet between these regions of copious precipitation the rainfall was extremely small, no less than six stations on the west coast of Florida receiving no rain whatever during the month.

Over most of the district the rainfall for the month ranged between 1 and 2 inches, comparatively few stations reporting more than 4 inches. In all States many places received less than 1 inch. The following cooperative stations received no appreciable rain during the month: In Florida, Carrabelle, Clermont, Jasper, Macclenny, Middleburg, Newport, and Wausau; and in South Carolina, Jacksonboro, a trace only.

In North Carolina, South Carolina, and portions of Florida and Georgia showers occurred on the 5th or 6th, but the first general rain over the entire district occurred from the 10th to 12th and was caused by the subtropical disturbance south of Florida. After a brief interval of fair weather general rains again fell over the district on the 14th and 15th in connection with a marked disturbance that passed eastward across the Lake region. Scattered rains then occurred on various dates from the 20th to 24th, the remainder of the month being fair. Comparatively few stations reported heavy rains in brief intervals of time; the maximum amounts in twenty-four hours were: Key West, 11.23 inches on the 10th and 11th, and Miami, 9 on the 11th. A remarkable local heavy rain occurred on the 20th near the mouth of the Mobile River, Pensacola, Fla.,

receiving 5.47 inches and Pascagoula, Miss., 6.35 inches in twenty-four hours.

The average number of days with rain was 3 in Georgia, Alabama, and Florida, 4 in Mississippi, and 5 in North Carolina, South Carolina, and Virginia.

#### RIVER CONDITIONS.

The rivers did not reach the flood stages at any stations during October. As September was relatively dry and the rivers at the close of the month were at low stages, the small amount of rain received in October was hardly sufficient to maintain a normal flow.

#### MISCELLANEOUS PHENOMENA.

In Virginia the prevailing wind was from the northwest; in North Carolina from the southwest; in South Carolina, Georgia, and Florida, from the northeast; and in Alabama and Mississippi, from the north. The average hourly velocity exceeded 10 miles at but five places, namely, Hatteras, N. C., average hourly velocity, 14.3 miles; Savannah, Ga., 11.1; Jupiter, Fla., 15.8; Key West, 12.9; and Pensacola, Fla., 12.9. The maximum velocity during the hurricane was 83 miles an hour from the northeast at Key West on October 11. Hatteras reported a maximum velocity of 45 miles from the southwest on the 15th, Atlanta 56 miles west on the 14th, and Pensacola 44 miles east on the 20th. The number of clear, bright days was unusually large. Only 2 days were entirely overcast in Georgia, and only from 3 to 5 days in other portions of the district. Excepting the severe local hailstorms in northern Alabama and Georgia on the 14th, the number of thunderstorms was notably small. The killing frosts on the 13th and 25th found but few crops remaining ungathered that could be injured.

#### THE WEST INDIAN HURRICANE OF OCTOBER 11, 1909.

The tropical disturbance that devastated the southern portion of Florida on October 11, 1909, was traced for several days before its appearance at Key West and warnings of its approach were issued by the Weather Bureau well in advance. On Sunday morning October 10 the storm was central over western Cuba and had begun to be felt at Key West, although the barometer at that place fell very slowly during the day, reaching only 29.80 inches by 9 p. m. The continuous rain, however, the easterly ocean swell gradually increasing toward night, and the rising northeast wind gave sufficient indication of the near approach of the hurricane.

During the night of the 10th the barometer at Key West continued to fall steadily, reaching 29.52 inches at 6 a. m. of the 11th, after which the decrease in pressure became remarkably rapid, giving a minimum atmospheric pressure at 11:40 a. m., of 28.52 inches or 1 inch lower than at 6 a. m. A similar remarkable fall in pressure occurred at Sand Key, about 6 miles southwest of Key West, where the barometer fell to 28.36 inches. This is believed to be the lowest atmospheric pressure ever observed in the United States, the lowest previous record being 28.48 inches during the Galveston hurricane of September, 1900. The pressure curve at Sand Key during the storm is shown in fig. 1.

At Key West the rain which had continued steadily with occasional heavy gusts since 9:15 a. m. of October 9 became excessive shortly after 4 a. m. of the 11th and from 8:45 to 11 a. m. the downpour was almost torrential, 6.13 inches of rain falling in two hours and fifteen minutes. The wind increased to a gale from the northeast at 6:45 a. m. and continued until 1:15 p. m., the storm thus lasting six and one-half hours. The maximum velocity for five minutes was 83 miles from the northeast at 10:05 a. m., with an extreme velocity of 94 miles for one minute. At 11:40 a. m. the wind suddenly shifted from northeast to northwest and the barometer began to rise rapidly. The backing of the wind indicated that the hurricane had recurved to the east south of Key West. Thence it passed along the extreme southern portion of Florida eastward into the

Atlantic Ocean. At Miami, Fla., the maximum velocity of wind (about 60 miles) and the lowest pressure (29.22 inches) did not occur until 5:30 p. m. of the 11th. In extreme southern Florida the rainfall at several places exceeded 8 to 10 inches in twenty-four hours, but the rain area did not extend into northern Florida. The general pressure distribution on the 11th and the path of the hurricane are shown in figs. 1 and 2, under "Weather, forecasts, and warnings for the month."

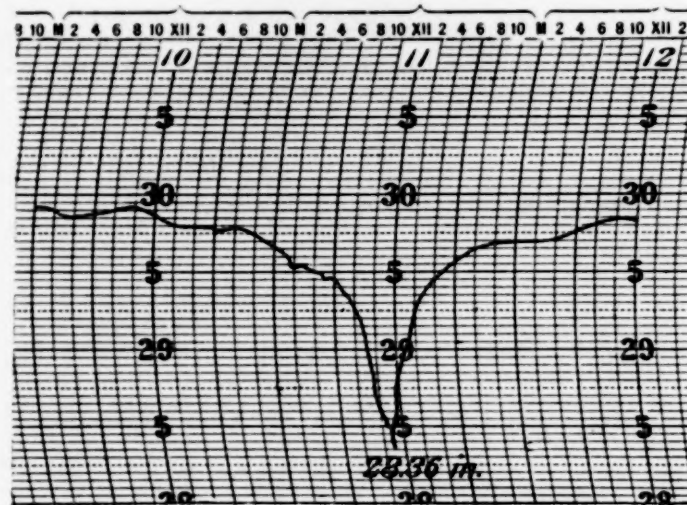


FIG. 1.—Barograph trace at Sand Key, Fla., October 11, 1909.

The damage to property at Key West is estimated at nearly \$1,000,000. About 400 buildings were destroyed. The tide rose into the streets in the northern part of the city and the lifting power of the water combined with the fury of the wind caused many dwellings to collapse or moved them away from their foundations into the streets or vacant lots. A portion of a large concrete cigar factory was blown down. Along the water front more than 300 boats were totally destroyed.

At Miami, Fla., the damage was much less. The gale lasted only an hour, but some buildings were unroofed and flooded with water. The New March Villa, a hotel nearly completed, standing on a prominent elevation, was razed to the ground. A number of shade trees in town and many coconut trees along the beach were blown down.

A number of small keys were swept by the storm, but the total loss of life did not exceed thirteen. The Key West extension of the Florida East Coast Railway suffered considerable loss, portions of the track, trestles, floating equipment, etc., being carried away. Had not the company been fully forewarned of the coming storm the loss of property and of life would have been much greater.

#### THE SEVERE HAILSTORM AT ATLANTA.

The weather map for the morning of October 14, 1909, revealed the presence of an area of low atmospheric pressure of considerable depth near Marquette, Mich., where the reduced pressure at 7 a. m. (central time) was 29.30 inches. At the same time, however, the pressure was relatively high (above 30.10 inches) over northern Florida and southern Georgia, and there was apparently no well developed trough of low pressure extending southward from the storm center. Nor were there any sharp contrasts in temperature in the central valley or Southern States. By the morning of October 15 the storm had moved far down the St. Lawrence Valley. During the forenoon of October 14 the barometer fell steadily at Atlanta, reaching at noon a station pressure of 28.80 inches, and at 4:50 p. m. 28.60 inches. The weather during the forenoon was not excessively warm, the temperature ranging from 51° to 58°, but it rose between 2 and 4 p. m. to 70°. Showers fell at in-



tervals from 6:25 a. m. to 1:25 p. m., after which the sky cleared. The amount of rainfall was small.

About 4:30 p. m. the barometer began to fall more rapidly, and at the same time a dark mass of clouds was observed in the west and southwest which rapidly approached and assumed a very threatening aspect. These clouds, though massive, did not cover a very extended horizontal area, as was indicated by the fact that the rays of the sun, which was then near setting, penetrated beneath the cloud producing a weird yellow glow that continued throughout the storm and alarmed very many people. The wind was fresh from the southeast.

The storm broke over the city at exactly 5 p. m., central time. At this moment the wind shifted to northwest increasing in force and rain began to fall in large scattered drops. The barometer suddenly fell to 28.45 inches, a proof that the storm approached in character a tornado rather than an ordinary thunderstorm. However, nothing in the least similar to a funnel-shaped cloud was seen. Hail began to fall at 5:05 p. m., the wind rose to a maximum velocity of 56 miles an hour, and for a brief time, on account of the remarkable size of the hailstones, the high wind, and the strange yellow light, the force of the storm seemed terrific. The hail ceased at 5:12 and the rain at 5:15 p. m., the wind quickly subsided, shifting back to southeast. The barometer rose rapidly two-tenths of an inch. The temperature did not fall and remained relatively high during the night.

The hail did not fall very thickly but its size was most remarkable, indicating descent from very high altitudes. There were no small hailstones, but they varied in size from an inch to two and a half or even three inches in diameter. Many stones were certainly as large as small oranges. Some pieces evidently formed of several stones frozen together, were 3 to 4 inches long, 2 or 3 inches wide and an inch thick.

The damage caused by the hail in the aggregate was very considerable, and is conservatively estimated to have exceeded \$50,000. The storm passed across the main business section and neighboring portion of the northside residence districts. In the first place, hundreds of large plate glass windows were

broken in all the tall office buildings of which Atlanta has a great many; the combined force of the wind and hail even broke some of the very largest windows in offices and stores on the ground floors or streets. Private dwellings also suffered severely. The rain was then blown into the rooms through the broken windows, but fortunately the damage by water was slight as the rainfall during the storm was quite small. The florists in the city and suburbs suffered the greatest individual losses, all the lights being broken in some cases.

Second, the street railway and telephone systems were quite disorganized for a time. Here and there trolley wires were broken or trees were blown across the tracks. Hundreds of telephones were rendered useless. Live stock, especially horses, mules, and cows, suffered severely; some were killed; many horses and mules attached to wagons became frantic with pain and dashed away, causing a few collisions and other accidents. The owner of a pair of fine horses calmly drove them into a drug store for safety.

While no one was killed, a few people were slightly injured and many had narrow escapes. The most vivid idea of the nature of the storm will be gained from a narrative of the experience of the people who were on the street cars at the time. The electric power was cut off and the cars were suddenly left in darkness. As this sometimes happens in ordinary weather it alarmed no one. But presently hail began to bombard the roofs of the cars with great force, many of the windows were broken in, and the passengers, many of whom were ladies, were drenched with water. Under these conditions the panic was so great that clerks in the nearest stores rushed to the rescue and placed the women in safety. For a short time it was dangerous to walk along the streets on account of danger from falling glass.

On the same date similar storms occurred over a limited district in north-central Georgia lying between Elrod and Fayette counties on the west and Clarke County on the east. The experience of Atlanta was repeated at Rome, Cartersville, Marietta, Chattahoochee, Jonesboro, and many smaller towns. Some houses were destroyed and several lives lost.

TABLE 1.—Climatological data for October, 1909. District No. 2, South Atlantic and east Gulf States.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.			Number of cloudy days.
Virginia.																				
Arvonla	Buckingham	350	5	53.4		78	9	28	30	32	0.77		0.43	0.0	5	21	6	4	w.	Rev. Plummer F. Jones.
Ashland	Hanover	221	18	53.7	- 3.6	79	8	26	30	38	1.49	- 2.16	0.72	0.0	4	22	6	3	w.	E. L. C. Scott.
Buchanan	Botetourt	820	5								3.53		3.06	0.0	5	20	6	9	w.	D. D. Boozee.
Callville	Brunswick	250	15	57.4	- 1.2	80	18	28	30	42	1.39	- 1.45	0.64	0.0	3	17	13	1	n.	F. M. Gage.
Cape Henry	Princess Ann	20	35	58.4	- 3.7	79	18	41	14	32	1.03	- 2.85	0.50	0.0	5	21	4	6	n.	U. S. Weather Bureau.
Charlottesville	Albemarle	800	20	56.4	- 1.0	81	19	34	25	34	1.08	- 2.43	0.95	0.0	5	20	7	4	e.	Leander McCormick.
Clarkville	Mecklenburg	246	15								1.15	- 1.39	0.60	0.0	3	26	0	7	w.	J. Henry Ligon.
Columbia	Fluvanna	246	11	52.8	- 4.2	80	21	25	29	48	0.74	- 2.83	0.40	0.0	5	19	5	7	nw.	Agent, C. & O. R. R.
Danville	Pittsylvania	413	9								1.44		0.81	0.0	6	21	2	8	w.	C. G. Watkins.
Diamond Springs	Princess Anne	20		56.2		81	11	32	30	44	1.20		0.65	0.0	2					Virginia Experiment Sta.
Dinwiddie	Dinwiddie	267	5																	W. N. Colson.
Hampton	Elizabeth City	5	26	59.6	- 1.8	81	11	35	29	42	1.51	- 1.90	0.72	0.0	4	22	2	7	ne.	Hampton Institute.
Hot Springs	Bath	2,195	17	48.0	- 3.3	71	9	18	29	36	3.56	+ 0.58	2.65	0.0	4	21	4	6		James P. Scott.
Ivor	Southampton	87	17	56.6		80	10	24	30	45	1.05		0.68	0.0	4					Agent N. & W. Ry.
Lexington	Rockbridge	1,060	32	51.0	- 3.2	80	10	25	27	50	2.72	- 0.22	2.28	0.0	3	27	2	2		Virginia Mil. Institute.
Lynchburg	Campbell	1,300	38	53.9	- 3.7	81	18	30	26	42	1.46	- 1.83	1.02	0.0	6	15	12	4	nw.	U. S. Weather Bureau.
New Castle	Craig	55	6								1.94		1.72	0.0	2	17	7	7		Miss J. L. Martin.
Newport News	Warwick	55	6	58.2		81	11	35	20	34	1.86		0.78	0.0	7	26	1	4		Ernest W. Sniffen.
Petersburg	Norfolk	91	39	58.4		79	23	40	26	31	1.43		0.55	0.0	6	23	1	7	sw.	U. S. Weather Bureau.
Randolph	Dinwiddie	60	22	56.4	- 1.9	80	19	31	30	35	2.04	- 1.16	0.71	0.0	7				nw.	Central State Hospital.
Richmond	Charlotte	334	5								1.48		0.60	0.0	4	26	0	5	sw.	W. B. Spencer.
Rocky Mount	Henrico	144	30	55.4	- 4.2	79	26	33	30	35	0.77	- 2.39	0.31	0.0	5	13	16	2	sw.	U. S. Weather Bureau.
Sabot	Franklin	1,150	15	52.6	- 4.6	79	9	20	29	46	2.38	- 1.57	1.93	0.0	3	23	0	8	nw.	G. W. B. Hale.
Sax	Goochland	125	3	54.0		82	9	20	29	49	1.30		0.71	0.0	4	27	1	3		W. A. Jacobs.
Spottsville (near)	Charlotte	350	6								1.30		0.55	0.0	5	24	0	7	s.	State Experm. Farm.
Williamsburg	Surry	15	21	55.1	- 2.7	81	23	25	30	41	2.14	- 1.82	0.68	0.0	5	24	2	5	nw.	B. W. Jones.
	James City	70	18	56.2	- 2.8	81	9	29	30	41	1.55	- 1.92	0.85	0.0	6	27	1	3	sw.	Eastern State Hospital.
North Carolina.																				
Beaufort	Carteret	10	7	63.4		79	12	42	30	27	0.89		0.77	0.0	3	23	5	3	sw.	H. D. Allen.
Belhaven	Beaufort	4	4	59.0		83	9	27	30	48	0.74		0.35	0.0	3	26	3	2	w.	William S. Hopkins.
Brewers	Wilkes	1,950	12	54.2	- 4.6	82	8	24	25	51	3.21	- 1.05	2.61	0.0	6	17	7	7	w.	W. L. Brewer.
Caroleen	Rutherford	806	9	57.0		81	11	28	25	42	1.81		0.81	0.0	4	22	6	3	n.	S. B. Tanner.
Chalybeate Springs	Harnett	500	3	57.4		84	10	25	29	43	1.37		0.57	0.0	4	22	8	1	sw.	J. A. Smith.
Chapel Hill	Orange	500	51	59.0	- 0.9	83	9	33	13	39	2.52	- 0.73	0.74	0.0	6	23	5	3	nw.	Prof. A. H. Patterson.
Charlotte	Mecklenburg	808	33	58.8	- 2.3	80	10	23	25	32	1.37	- 1.78	0.92	0.0	5	22	5	4	sw.	U. S. Weather Bureau.
Chimney Rock	Rutherford	1,150	1	57.5		83	18	28	25	40	2.33		0.85	0.0	5	24	6	1	w.	Dr. L. B. Merse.
Clinton	Sampson	156	2	59.8		85	9	30	29	44	0.87		0.35	0.0	4	25	6	0	n.	Thomas Boyette.
Edgetown	Northampton	66	4	56.9		83	23	29	29	39	1.55		0.82	0.0	6	24	6	1	sw.	J. T. Elliott.
Edenton	Chowan	30	15	56.2	- 5.2	78	11	28	30	36	1.53	- 2.90	0.80	0.0	3	24	2	5	nw.	E. R. Conger.
Fayetteville	Cumberland	170	22	60.2	- 1.8	85	10	30	29	43	0.85	- 2.64	0.42	0.0	4					Frank Glover.
Goldsboro	Wayne	102	39	57.4	- 4.1	83	23	29	30	47	1.13	- 2.07	0.63	0.0	5				w.	Mrs. N. B. Taylor.
Graham	Alamance	656	7								2.21		0.56	0.0	6					Dr. W. R. Goley.
Greensboro	Guilford	843	28	56.8	- 3.4	81	18	30	29	41	2.67	- 0.24	0.55	0.0	7				ne.	A. R. Horry.
Greenville	Pitt	75	16								0.67	- 2.61	0.27	0.0	4					C. V. York.
Hatteras	Dare	11	35	63.0	- 3.0	79	11	45	29	25	0.41	- 5.60	0.23	0.0	3	24	6	1	ne.	U. S. Weather Bureau.
Henderson	Vance	490	16	55.6	- 4.1	78	9	31	29	32	1.22	- 1.94	0.55	0.0	4	24	4	3	nw.	Enoch Powell.
Kinston	Lenoir	46	11																	Rev. J. R. Rountree.
Lenoir	Caldwell	1,186	36	54.0	- 2.5	82	18	23	25	49	2.70	- 0.62	1.80	0.0	4	25	1	5	s.	G. M. Goforth.
Lexington	Davidson	810	8	55.8		84	10	26	29	42	2.36		0.62	0.0	6	23	7	1	w.	H. R. Berrier.
Lincolnton	Lincoln	994	4	56.5		86	10	26	25	42	2.24		0.74	0.0	5	24	0	7	w.	L. B. Thorapson.
Louisburg	Franklin	375	18	55.6	- 3.3	80	2	28	29	39	2.19	- 0.71	0.86	0.0	4	22	8	1	nw.	T. B. Wilder.
Lumberton	Robeson	102	26	59.5	- 2.2	87	9	29	30	49	1.53	- 1.69	0.70	0.0	6				n.	B. M. Davis.
Manteo	Dare	12	4	60.1		78	11	35	30	34	0.97		0.83	0.0	2	27	2	2	ne.	U. S. Weather Bureau.
Marion	McDowell	1,425	17	57.1	- 1.4	87	18	25	29	47	2.64	- 1.59	1.21	0.0	6	22	6	3	w.	Thomas McGuire.
Moncure	Chatham	145	15	56.6	- 3.3	83	10	26	29	46	1.11	- 1.38	0.55	0.0	6	23	2	6	nw.	B. J. Utley.
Monroe	Union	586	15	57.8	- 1.2	83	10	26	26	44	1.31	- 2.18	0.80	0.0	4	25	3	3	ne.	T. A. Ashcraft.
Morganton	Burke	1,135	22	56.1	- 1.2	83	18	26	25	44	2.34	- 1.28	1.06	0.0	7	25	1	5	nw.	H. D. Judd.
Mt. Airy	Surry	1,048	21	54.0	- 2.1	83	18	23	26	50	1.45	- 1.24	0.66	0.0	7	22	4	5	nw.	Prof. A. H. Merritt.
Mt. Holly	Gaston	616	12								1.08	- 1.88	0.80	0.0	6					John W. Holland.
Nashville	Nash	190	5	56.2		82	11	26	29	45	1.27		0.50	0.0	4	22	3	6	n.	J. B. Boddie.
Newbern	Craven	12	27	59.5	- 3.3	84	9	30	30	50	0.77	- 3.04	0.48	0.0	3				ne.	James B. Hill.
Pinehurst	Moore	650	5	59.5		83	9	33	25	39	1.29		0.49	0.0	6	25	5	1	w.	General Office.
Pittsboro	Chatham	480	18																	J. E. Morgan.
Raleigh	Wake	390	38	58.4	- 2.1	80	23	34	29	31	1.52	- 1.98	0.68	0.0	5	19	8	4	ne.	U. S. Weather Bureau.
Ramseur	Randolph	442	2	55.5		81	11	24	29	47	1.88		0.67	0.0	5	18	10	3	se.	P. P. Turner.
Randleman	Randolph	810	4								2.88		0.84	0.0	8					John R. Walton.
Reidsville	Rockingham	828	10	57.6		82	8	29	25	38	1.85	- 0.64	0.51	0.0	8	19	2	10	sw.	E. M. Redd.
Rockingham	Rockingham	210	14	57.8	- 3.8	84	10	27	25	50	1.									



TABLE 1.—Climatological data for October, 1909. District No. 2—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.					Precipitation, in inches.					Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.			Number of cloudy days.
South Carolina—Cont'd.																				
Calhoun Falls.	Abbeville	508	16								3.04	+ 0.29	2.21	0.0	4	28	0	3	nw.	P. J. Pfeifer.
Camden(1).	Kershaw.	222	43	60.8		82	4	35	25	32	2.55	1.17	1.17	0.0	5	25	4	2	e.	J. B. Mickle.
Camden(2).	Kershaw.	222	43								4.48	+ 1.80	1.86	0.0	3	25	4	2	ne.	J. C. Brown.
Catawba.	York.	562	4								1.58		0.66	0.0	5	21	4	6	ne.	Jas. C. Faris.
Chappells.	Newberry.	402	4								2.32		1.36	0.0	3	21	3	6	ne.	M. C. Rivers.
Charleston.	Charleston.	48	39	65.4	- 1.7	81	11	43	25	22	2.00	- 1.93	1.28	0.0	7	21	9	1	e.	U. S. Weather Bureau.
Cheraw(1).	Chesterfield.	144	21	59.0	- 1.9	83	8	32	26	41	1.67	- 1.04	0.83	0.0	6	22	5	4	nw.	W. R. Godfrey.
Cheraw(2).	Chesterfield.	144	16																	Jno H. Powe.
Clarks Hill.	Edgefield.	456	7																	Wm. S. Middleton.
Clemson College.	Oconee.	850	18	59.2	- 2.2	77	4	30	25	32	2.51	- 0.29	0.85	0.0	5	26	3	2	w.	Prof. John N. Hook.
Columbia.	Richland.	351	22	61.3	- 2.7	84	4	35	26	32	3.43	+ 0.58	1.58	0.0	7	21	5	5	ne.	U. S. Weather Bureau.
Conway.	Horry.	25	17	60.9	- 2.0	84	9	32	30	35	2.56	- 0.78	0.82	0.0	6	20	0	11	sw.	P. C. Quattlebaum.
Darlington.	Darlington.	175	14	60.0 <sup>b</sup>		86	10	32	26	43	1.84	- 0.84	0.83	0.0	4					D. C. McCall.
Dillon.	Marion.	100	5								2.72		0.85	0.0	5					A. E. Rowell.
Effingham.	Florence.	106	17								4.74	+ 1.91	1.90	0.0	4	23	1	7	sw.	H. B. McCall.
Ferguson.	Berkeley.	51	2								1.48		0.52	0.0	5	19	4	8	e.	D. B. Gilliland, jr.
Florence.	Florence.	136	21	62.6	- 0.4	96	10	35	26	46	2.27	- 0.60	0.85	0.0	6	22	3	6	ne.	H. K. Gilbert.
Georgetown.	Georgetown.	12	16	63.1	- 1.8	80	23	38	25	30	2.38	- 1.07	2.04	0.0	2	22	8	1	se.	Wm. Alden James.
Greenville.	Greenville.	989	17	57.2	- 2.8	80	9	30	25	37	2.29	- 0.49	1.37	0.0	6	21	2	8	nw.	Mrs. S. A. Crittenden.
Greenwood.	Greenwood.	671	21	59.3	- 2.4	82	1	33	25	32	1.57	- 1.02	1.22	0.0	2	25	0	6	w.	M. M. Calhoun.
Heath Springs.	Lancaster.	568	8	61.7		84	1	32	29	36	1.95		0.70	0.0	6	21	6	4	w.	J. A. Weaver.
Jacksonboro.	Colleton.	13	1	62.4 <sup>b</sup>		85	10	35	24	37	T.		T.	0.0	0	21	7	3	se.	W. E. Haskell, jr.
Kingstree(1).	Williamsburg.	54	15																	J. A. Scott.
Kingstree(2).	Williamsburg.	54	21	63.4	- 0.9	85	10	35	25	38	1.79	- 0.80	0.65	0.0	5	20	3	8	ne.	A. O. Matthews.
Liberty.	Pickens.	900	15	59.4	- 0.6	82	1	27	25	30	2.00	- 0.93	0.95	0.0	5	23	6	2	sw.	Jno T. Boggs.
Little Mountain.	Newberry.	711	16	60.6	- 3.0	81	10	33	25	26	2.01	- 0.87	1.12	0.0	4	26	3	2	n.	Dr. J. M. Sease.
Newberry.	Newberry.	502	5	60.0		83	10	31	25	38	2.09		1.00	0.0	6	22	3	6	w.	W. G. Peterson.
Pelzer.	Anderson.	873	4								2.56		1.08	0.0	7	24	0	7	w.	John M. Ward.
Pinopolis.	Berkeley.	54	16								3.88	+ 0.95	1.85	0.0	3					Miss E. P. Ravenel.
St. George.	Dorchester.	109	21	61.4	- 2.7	82	5	34	30	36	2.22	+ 0.66	1.12	0.0	3	27	0	4		G. T. Lewis.
St. Matthews.	Calhoun.	209	21	59.5	- 4.3	82	4	36	25	37	2.98	+ 0.55	1.25	0.0	4	16	0	15		J. S. Wannamaker.
Saluda.	Saluda.	530	7																	Alvin Etheridge.
Santuc.	Union.	512	15	59.2	- 1.8	83	10	29	25	38	1.30	- 1.94	0.43	0.0	5	20	7	4	e.	E. W. Jeter.
Smith Mills.	Williamsburg.	62	14								2.10	- 1.44	0.87	0.0	6	21	0	10	w.	W. G. Walker.
Society Hill.	Darlington.	192	18	58.6	- 2.9	79	11	33	29	32	1.84	- 1.34	0.96	0.0	4	22	7	2	ne.	J. J. Lucas.
Spartanburg.	Spartanburg.	875	18	59.5	- 1.2	85	10	29	25	44	1.79	- 0.75	1.28	0.0	6	23	0	8		F. P. Robinson.
Summerville.	Dorchester.	75	12	62.4	- 2.1	83	11	35	25	37	2.41	- 1.35	0.77	0.0	7	16	11	1	sw.	Miss E. H. Gadsden.
Trenton.	Edgefield.	620	16	60.2	- 4.5	85	4	32	25	34	4.38	+ 1.32	1.84	0.0	5	20	8	3	w.	C. A. Long.
Tril.	Berkeley.	85	23	61.8	- 0.2	84	4	32	30	41	4.20	+ 1.26	2.75	0.0	6	14	12	5	ne.	Etsell Gaillard.
Walhalla.	Oconee.	1,061	18	58.5	- 1.4	81	4	29	25	36	2.93	- 0.07	1.82	0.0	4	26	3	2	nw.	N. L. Fant.
Walterboro.	Colleton.	69	5	64.4 <sup>b</sup>		88	5	36	25	42	2.98		2.48	0.0	4	25	5	1		J. A. Westerberg.
Winnboro.	Fairfield.	545	20	62.1	- 1.3	83	4	35	25	34	0.30	- 2.93	0.30	0.0	1	24	0	7	se.	John W. Stigler.
Winthrop College.	York.	690	10	60.0		82	9	32	25	34	1.53		0.86	0.0	5	24	3	4	sw.	E. R. Rivers.
Yemassee.	Hampton.	23	14	62.4	- 2.2	85	10	34	25	38	0.48	- 2.25	0.22	0.0	3	26	0	5		J. G. Hudson.
Georgia.																				
Abbeville.	Wilcox.	6									0.12		0.12	0.0	1					W. H. Calhoun.
Adairsville.	Bartow.	772	17	60.6 <sup>b</sup>	- 0.4	87	4	25	25	36	2.46	+ 0.26	2.20	0.0	3	14	9	8	n.	Dr. J. P. Bowdoin.
Albany.	Dougherty.	230	24	67.0	- 0.4	92	5	38	25	39	0.20	- 2.43	0.16	0.0	3					Geo C. Brosnan.
Allapaha.	Berrien.	293	20	65.6 <sup>b</sup>	- 0.8	95	4	34	25	44	0.80	- 1.83	0.45	0.0	2					Miss Gladys Lucas.
Americus.	Sumter.	362	26	63.6	- 2.4	87	1	38	25	38	0.25	- 2.00	0.20	0.0	2					L. A. Smith.
Athens.	Clarke.	694	32	58.3	- 1.0	83	4	32	25	28	3.30	+ 0.80	2.08	0.0	5					C. D. Cox.
Atlanta.	Fulton.	1,218	44	61.3	- 0.2	85	4	35	25	30	1.63	- 0.68	0.76	0.0	6	24	3	4	w.	U. S. Weather Bureau.
Augusta.	Richmond.	180	43	61.8	- 2.4	87	4	36	25	33	2.73	+ 0.45	1.32	0.0	4	23	3	5	nw.	U. S. Weather Bureau.
Bainbridge.	Decatur.	119	17	68.1	+ 1.1	98	5	33	25	45	0.44	- 1.86	0.27	0.0	3					Mrs. C. O. Wimberley.
Barnesville.	Pike.	875	1	64.4		88	4	33	25	36	0.78		0.41	0.0	4					Prof. J. R. Leavell.
Blakely.	Early.	300	18	67.8	+ 0.5	97	5	35	25	46	1.03	- 1.87	0.91	0.0	2	20	10	1	e.	Ralph M. Hobbs.
Brunswick.	Glynn.	14	11																	J. B. High.
Butler.	Taylor.	650	7								0.39		0.19	0.0	2					Mrs. Mamie F. Wallace.
Camak.	Warren.	613	16	62.6	- 0.4	92	4	31	25	40	3.41	+ 0.99	1.99	0.0	4					J. A. Chapman.
Canton.	Cherokee.	894	16																	J. M. McAfee.
Carleton.	Madison.	557	10								3.40		2.26	0.0	4					M. C. Power.
Carrollton.	Carroll.	12																		Prof. J. H. Melson.
Clayton.	Rabun.	2,100	16	55.4	- 1.4	81	4	24	25	40	3.26	- 0.73	1.36	0.0	3	26	1	4	w.	A. J. Duncan.
Columbus.	Muscookee.	262	22	66.0	- 0.1	95	4	35	25	41	0.93	- 1.59	0.45	0.0	3					J. W. Long.
Covington.	Newton.	800	16								1.64	- 1.24	1.30	0.0	3					Rufus Cruise.
Cuthbert.	Randolph.	446	10	67.2 <sup>b</sup>	+ 2.1	93	4	35	26	40	0.57		0.30	0.0	2	24	4	3		Prof. W. McMichaels.
Dalhousie.	Lumpkin.	1,519	17	57.2	- 2.2	82	4	26	25	37	3.69	+ 0.92	1.54	0.0	5	23	6	2	nw.	Prof. B. P. Gaillard.
Diamond.	Gilmer.	2,020	19	55.5	- 1.5	81	4	26	25	37	3.79	+ 0.64	1.83	0.0	5	24	5	2		R. A. Kinzey.
Douglas.	Coffee.	500	2																	

TABLE 1.—Climatological data for October, 1909. District No. 2—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.							Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		
Georgia—Cont'd.																				
Milledgeville.....	Baldwin.....	276	21	61.0°	- 2.0	85	9	32	25	42	1.42	- 0.80	1.36	0.0	2	24	1	6	ne.	Prof. O. M. Cone.
Millen.....	Jenkins.....	158	22	64.0	- 0.9	90	4	33	25	41	1.00	- 1.56	0.65	0.0	3				nw.	M. G. McComb.
Monteama.....	Macon.....	292	4								0.22		0.12	0.0					nw.	W. N. Drewry.
Monticello.....	Jasper.....	800	13	62.4	- 0.4	91	4	30	25	37	2.15	- 0.50	1.70	0.0	5					Miss Maud C. Penn.
Morgan.....	Calhoun.....	337	17	65.0	- 0.8	90	5	34	24	44	0.14	- 2.15	0.14	0.0	1	30	0	1		J. J. Beck.
Newnan.....	Coweta.....	959	21	62.2	+ 0.2	89	4	30	25	42	1.70	- 1.03	0.80	0.0	3				ne.	Mrs. I. J. Milner.
Oakdale.....	Fulton.....	810	9								2.20		0.91	0.0	4				w.	W. R. B. Whittier.
Point Peter.....	Oglethorpe.....	1,000	20	59.6	- 0.7	86	4	30	25	37	2.60	+ 0.02	2.20	0.0	3	23	5	3	w.	C. M. Witchee.
Poulan.....	Worth.....	365	18	64.7	- 0.2	89	4	34	25	45	0.21	- 2.11	0.18	0.0	3				e.	Dr. J. F. Wilson.
Putnam.....	Marion.....	173	25	69.0	+ 1.4	95	5	33	25	45	0.36	- 1.84	0.25	0.0	2	21	8	2	e.	Mrs. J. M. Collum.
Quitman.....	Brooks.....	1,363	16	59.4°	- 1.7	78	8	28	25	37	2.76	+ 0.08	1.88	0.0	3				n.	A. B. Jones.
Ramsey.....	Murray.....	657	16								2.46	+ 0.01	1.34	0.0	3				se.	D. E. Humphreys.
Reaca.....	Gordon.....	576	54	59.9	- 1.8	91	4	28	25	42	3.08	+ 0.58	2.42	0.0	4				w.	D. A. Norton.
Rome.....	Floyd.....	3	3	66.6		87	2	40	28	42	0.16				1				w.	W. M. Towers.
St. George.....	Charlton.....	20	18	68.2	- 0.2	88	5	43	25	39	0.15	- 3.83	0.13	0.0	2	18	11	2	ne.	John Harris.
St. Mary's.....	Camden.....	65	59	66.4	- 0.5	83	11	40	25	26	0.93	- 2.89	0.52	0.0	5	21	7	3	e.	David C. Sterling.
Savannah.....	Chatham.....	253	9	65.2	- 0.5	87	1	38	25	38	1.28	- 0.65	1.02	0.0	4	21	10	0		U. S. Weather Bureau.
Statesboro.....	Bulloch.....	750	16								2.69	- 0.01	1.43	0.0	3					J. C. Cromley.
Talbotton.....	Talbot.....	1,150	11	61.2	- 0.3	90	5	30	25	44	2.69	- 0.01	1.43	0.0	3					Dr. W. T. Dennis.
Tallapoosa.....	Haralson.....	273	26	66.9	- 1.6	92	5	36	25	37	0.84	- 2.30	0.50	0.0	4	20	8	3	e.	R. M. Strickland.
Thomasville.....	Thomas.....	1,050	24	56.6°	- 3.7	84	4	28	25	34	2.26	- 0.81	1.09	0.0	4				w.	U. S. Weather Bureau.
Toccoa.....	Stephens.....	219	4	67.9		94	5	34	25	43	0.32		0.32	0.0	1				e.	E. A. Newton.
Valdosta.....	Lowndes.....	10	9	65.3	- 2.5	86	11	40	25	38	0.60	- 3.19	0.60	0.0	1				se.	Miss Annie L. Twitty.
Valona.....	McIntosh.....	630	22	61.5	- 1.1	88	4	34	25	33	2.21	- 0.29	0.87	0.0	4				ne.	J. M. Atwood.
Washington.....	Wilkes.....	131	20	67.6	- 0.4	92	5	37	25	47	2.20	- 0.37	2.02	0.0	4				ne.	Miss Ella B. Smith.
Waycross.....	Ware.....	86	18	62.4	- 0.8	87	4	36	25	35	1.20	- 1.06	0.90	0.0	2				e.	Thos. Sasser.
Waynesboro.....	Burke.....	620	21	61.8	- 2.0	94	4	32	25	45	1.95	- 0.69	0.90	0.0	4				nw.	Mrs. H. W. Blount.
West Point.....	Troup.....	641	9								1.41	- 1.07	0.65	0.0	3	20	3	8	sw.	E. N. Dunn.
Woodbury.....	Meriwether.....																			G. A. Wright.
Alabama.																				
Alaga.....	Houston.....	105	4								1.04		0.54	0.0	2	24	2	5	e.	James L. Willis.
Aniston.....	Calhoun.....	741	18	61.4	- 1.0	89	4	28	25	40	1.48	- 0.86	0.67	0.0	4	24	2	5	se.	U. S. Weather Bureau.
Ashville.....	St. Clair.....	685	16	59.8°	- 1.4	92	5	26	25	48	1.83	- 0.87	1.44	0.0	4	28	0	3	nw.	George R. Cather.
Auburn.....	Lee.....	732	20	66.0	+ 2.0	94	5	33	25	37	1.42	- 1.50	0.53	0.0	3	19	10	2	nw.	James T. Anderson.
Benton.....	Lowndes.....	149	8								0.46		0.42	0.0	2	30	0	1	ne.	S. T. Pruitt.
Bermuda.....	Conecuh.....	22	65.4°	+ 0.9	94	5	33	25	42	1.02	- 1.54	0.46	0.0	4	23	6	2	se.	M. J. Morris.	
Birmingham.....	Jefferson.....	700	21	64.9	+ 0.5	91	5	36	25	35	1.47	- 0.87	1.11	0.0	3	18	10	3	n.	U. S. Weather Bureau.
Boligee.....	Greene.....	119	5	63.7		93	6	31	25	46	1.66		1.45	0.0	3	27	3	1	n	Guy P. Brugh.
Calera.....	Shelby.....	500	8								1.34		0.72	0.0	3	28	1	2	e.	L. G. Privett.
Camp Hill.....	Tallapoosa.....	738	8	65.1		91	4	36	25	42	0.85		0.55	0.0	2	22	9	0	sw.	Dr. Lyman Ward.
Cedar Bluff.....	Cherokee.....	594	5								2.30		1.40	0.0	3	25	6	0		Joe L. Daniel.
Citronelle.....	Mobile.....	331	21	68.4	+ 0.4	92	4	37	25	30	1.79	- 1.14	1.62	0.0	4	26	3	2	nw.	George A. Maloney.
Clinton.....	Chilton.....	500	16	63.2	+ 0.2	92	5	29	25	41	0.72	- 1.67	0.35	0.0	5	20	2	9	se.	Wallace C. Edler.
Cordova.....	Walker.....	334	15	61.4	- 0.1	93	6	29	25	46	2.75	+ 0.39	1.28	0.0	3	25	4	2	s.	Scott Maxwell.
Cullman.....	Cullman.....	802	2	60.2		90	5	27	25	44	2.23		1.33	0.0	5	24	3	4	n.	Eugene A. Grayot.
Dadeville.....	Tallapoosa.....	760	4								1.02		0.65	0.0	2	22	2	7	e.	Dr. W. B. Fulton.
Daphne.....	Baldwin.....	18	69.8°	+ 1.4	90	5	42	25	32	3.07	- 1.02	2.10	0.0	3	25	0	6	e.	John H. Young.	
Demopolis.....	Marion.....	17									0.68	- 1.37	1.37	0.0	4	28	0	3	sw.	George E. Pegram.
Double Springs.....	Winston.....	200	25	61.8	- 3.1	89	5	31	25	41	0.70	- 1.74	0.34	0.0	3	23	3	5	n.	Charles D. Hudgins.
Eufaula.....	Barbour.....	285	25	66.2	+ 1.5	96	5	30	25	45	3.00	+ 0.87	2.00	0.0	2	25	2	4	e.	Dr. J. B. Whitlock.
Evergreen.....	Conecuh.....	359	7	67.4		88	2	34	25	46	0.95		0.40	0.0	4	28	0	3	ne.	Robert L. Whitcomb.
Fayette.....	Fayette.....	91	7	67.4		88	2	34	25	46	0.95		0.40	0.0	4	28	0	3	ne.	W. V. Burns.
Flomaton.....	Escambia.....	520	25	65.3	+ 0.5	91	5	35	25	37	1.23	- 1.05	0.62	0.0	2	25	0	6	n.	T. J. Farris.
Fort Deposit.....	Lowndes.....	621	15	62.6	+ 1.0	92	5	30	25	44	2.76	+ 0.18	1.38	0.0	4	23	1	7	nw.	J. L. Parish.
Gadsden.....	Etowah.....	826	23	64.2	+ 0.4	89	4	30	25	43	0.62	- 1.83	0.42	0.0	3	25	0	6	s.	D. P. Goodhue.
Goodwater.....	Coosa.....	220	30	65.8	+ 1.6	90	5	38	25	38	0.51	- 1.61	0.21	0.0	3	25	0	6	sw.	S. D. Brown.
Greensboro.....	Hale.....	444	8								1.77		1.38	0.0	3	26	0	5	se.	W. E. W. Yerby.
Greenville.....	Butler.....	13	63.7	+ 2.1	96	5	27	13	49	1.11	- 1.64	0.69	0.0	2	27	0	4	n.	E. M. Lewis.	
Hamilton.....	Marion.....	17	67.9°	+ 1.8	92	4	36	25	33	1.40	- 0.96	0.81	0.0	3	25	2	4	nw.	Prof. H. O. Sargent.	
Highland Home.....	Crenshaw.....	160	25	62.2	- 1.2	90	4	25	25	46	2.24	+ 0.23	2.24	0.0	1	28	0	3	e.	Prof. Samuel Jordan.
Livingston.....	Sumter.....	510	12	62.0	- 0.5	92	5	30	25	41	2.36	+ 0.05	1.10	0.0	4	27	0	4	e.	Robert L. King.
Loek No 4.....	Talladega.....	4	65.6°		94	4	31	25	47	1.08		0.57	0.0	2	19	12	0		U. S. Engineers.	
Lucy.....	Houston.....	16	61.2	+ 0.8	94	5	28	24	45	1.15	- 1.51	0.38	0.0	4	21	9	1	nw.	A. L. Crosby.	
Maple Grove.....	Cherokee.....	1,595	2								3.95		2.95	0.0	3	26	1	4	nw.	Mrs. A. L. Awbrey.
Mentone.....	De Kalb.....	6									0.87		0.35	0.0	3	23	6	2	e.	E. Mason.
Milstead.....	Macon.....	57	37	69.8	+ 2.7	92	6	43	25	29	1.60	- 1.58	1.37	0.0	3	23	7	1	n.	Evie Oswalt.
Mobile.....	Mobile.....	223	37	65.5	- 0.2	91	4	35	25	34	0.60	- 1.84	0.35	0.0	3	22				



TABLE 1.—Climatological data for October, 1909. District No. 2—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.	Prevailing wind direction.
Florida—Cont'd.																				
Cedar Keys.	Levy.	10	12	73.2	+ 0.7	89	21	47	25	28	0.00	- 2.80	0.20	0.0	0	24	0	7	e.	J. B. Lutterloh.
Clermont.	Lake.	105	16								0.20	- 2.61	0.20	0	1	11	18	2	s.	S. S. Fesler.
DeFuniak Springs.	Walton.	193	14	69.5	+ 1.5	96	5	38	25	38	3.18	- 0.02	1.63	0.0	2	21	4	6	e.	R. W. Storrs.
DeLand.	Volusia.	27	13	69.4	+ 2.6	86	15	42	25	38	0.17	- 0.10	0.10	0.0	3	21	4	6	e.	O. B. Webster.
Eustis.	Lake.	56	17	72.0	- 0.8	93	1	45	25	37	0.66	- 2.57	0.08	0.0	3	23	5	3	ne.	C. T. Smith.
Federal Point.	Putnam.	5	17	70.4	- 0.9	87	5	48	17	37	0.20	- 4.26	0.45	0.0	3	23	5	3	ne.	E. S. Hubbard.
Fenholloway.	Taylor.	75	3								0.20	0.20	0.0	1	25	6	0	ne.	J. Wigglesworth.	
Fernandina.	Nassau.	10	12	71.0	- 0.3	85	15	51	14	32	0.20	- 5.32	0.14	0.0	2	27	1	3	ne.	W. B. C. Duryee.
Flamingo.	Monroe.	4	7																	E. R. Bradley.
Fort Meade.	Polk.	125	17	72.6	- 0.5	88	21	43	25	39	2.48	- 0.91	2.38	0.0	2	23	2	6	ne.	G. L. Brodick.
Fort Myers.	Lee.	12	17	74.9	- 0.4	88	7	58	14	20	3.88	+ 0.85	2.42	0.0	3	20	7	4	e.	M. M. Gardner.
Fort Pierce.	St. Lucie.	6	8	75.9	- 0.6	86	15	60	13	26	2.25	- 3.51	1.15	0.0	5	10	10	11	ne.	R. L. Goodwin.
Gainesville.	Alachua.	176	23	71.0	+ 0.6	90	9	44	25	36	1.00	- 1.54	1.00	0.0	1	23	6	2	ne.	J. P. H. Bell.
Grasmere.	Orange.	175	13	72.0	- 0.5	89	5	49	25	34	0.47	- 0.22	0.00	0.0	3	25	2	4	sw.	J. B. Escott.
Hilliard.	Nassau.	69	1	68.4	- 2.2	88	5	38	25	46	0.40	- 0.38	0.00	0.0	2	25	6	0	ne.	D. W. Griffing.
Huntington.	Putnam.	56	12	69.8	- 2.2	89	21	42	25	39	0.04	- 3.62	0.01	0.0	4	26	3	2	se.	E. C. Walker.
Hypoluxo.	Palm Beach.	43	9	76.4	- 0.7	87	11	60	16	20	10.63	+ 0.53	4.06	0.0	12	6	19	6	ne.	G. A. Angervine.
Inverness.	Citrus.	101	37	70.2	+ 0.6	88	9	44	14	40	1.63	- 0.22	0.70	0.0	3	9	21	1	ne.	W. H. Miller.
Jacksonville.	Duval.	152	11			85	15	45	25	23	0.08	- 4.98	0.06	0.0	3	18	7	6	ne.	U. S. Weather Bureau.
Jasper.	Hamilton.	125	14	69.1	- 0.7	90	5	36	17	48	0.26	- 2.73	0.26	0.0	1				ne.	G. W. Duncan.
Johnstown.	Bradford.	125	14	74.6	- 0.2	87	1	64	13	17	5.57	- 3.91	2.61	0.0	13	2	16	13	e.	A. M. C. Brasch.
Jupiter.	Palm Beach.	34	21	76.6	- 0.2	87	1	64	13	17	5.57	- 3.91	2.61	0.0	13	2	16	13	e.	U. S. Weather Bureau.
Key West.	Monroe.	14	38	77.4	- 1.3	88	1	71	25	12	16.87	+ 11.49	11.23	0.0	18	9	8	14	ne.	U. S. Weather Bureau.
Kissimmee.	Osceola.	65	17	72.4	- 2.3	88	3	48	25	31	1.22	- 3.15	1.22	0.0	1	24	3	4	ne.	J. A. Simpson.
Lake City.	Columbia.	210	20	68.4	- 1.5	92	5	40	25	43	0.26	- 2.50	0.26	0.0	1	20	7	4	ne.	W. B. Knight.
Live Oak.	Suwanee.	109	8																	D. O. Henry.
Macleenny.	Baker.	125	13	66.8	- 3.8	89	5	35	25	43	0.00	- 2.77	0.00	0.0	0				ne.	Griffing Bros. Co.
Madison.	Madison.	200	6	69.4	- 0.2	94	5	40	25	36	0.39	- 2.34	0.35	0.0	2	15	10	6	e.	E. J. Vann.
Malabar.	Brevard.	24	8	76.2	- 0.0	90	15	53	14	37	2.41	- 2.93	2.00	0.0	3				ne.	J. F. Farley.
Manatee.	Manatee.	8	17	73.9	- 0.0	89	14	51	25	34	1.14	- 1.57	0.74	0.0	4	9	18	4	e.	F. C. Whitaker.
Marianna.	Jackson.	80	9																	J. L. Behmyer.
Merritt's Island.	Brevard.	20	30	75.4	- 0.2	85	6	55	25	19	2.59	- 3.13	2.45	0.0	2	17	8	6	ne.	C. D. Provost.
Miami.	Dade.	5	13	77.4	- 0.0	91	1	56	15	20	21.08	+ 11.91	9.00	0.0	11	16	7	8	ne.	E. V. Blackman.
Middleburg.	Clay.	10	8	68.6	- 0.6	90	15	38	25	41	0.00	- 0.00	0.00	0.0	0				ne.	G. A. Chalker.
Molino.	Escambia.	49	8	66.2	- 0.6	92	6	37	25	38	3.97	- 2.02	0.00	0.0	3				ne.	W. H. Trimmer.
Monticello.	Jefferson.	207	4	70.0	- 0.6	90	5	46	25	34	1.42	- 1.11	0.00	0.0	2	24	7	0	se.	E. C. Potter.
Mt. Pleasant.	Gadsden.	260	5	67.8	- 0.6	93	19	34	25	43	0.85	- 0.70	0.00	0.0	2				ne.	Miss A. Grubb.
Newport.	Wakulla.	8			- 0.4	89	4				0.00	- 5.64	0.25	0.0	2				ne.	J. W. Ladd.
New Smyrna.	Volusia.	9	21	72.6	- 0.4	89	15	50	24	30	0.47	- 5.64	0.25	0.0	2				ne.	F. Nordman.
Ocala.	Marion.	98	22	71.0	- 1.0	91	9	39	25	42	T.	- 2.69	T.	0.0	0	23	5	3	e.	F. T. Schreiber.
Orange City.	Volusia.	39	19								0.11	- 4.11	0.11	0.0	1	23	8	0	e.	J. D. Graham.
Orlando.	Orange.	111	17	71.8	- 1.7	87	9	48	14	35	1.30	- 3.14	0.92	0.0	3	12	13	6	e.	James Thomson.
Pensacola.	Escambia.	149	31	69.8	+ 0.4	91	5	46	24	23	8.13	+ 4.05	5.47	0.0	4	25	3	3	e.	U. S. Weather Bureau.
Plant City.	Hillsboro.	121	17	71.2	- 2.4	85	2	44	25	32	0.62	- 2.18	0.62	0.0	1				ne.	E. B. Trask.
Rockledge.	Brevard.	28	1	73.8	- 0.6	86	4	51	14	30	2.22	- 2.22	0.00	0.0	1	25	5	1	ne.	J. H. White.
Rockwell.	Marion.	10	10	70.6	- 2.7	88	4	44	25	37	0.07	- 0.07	0.00	0.0	1				se.	Dunellon Phos. Co.
St. Andrew.	Huntington.	14	14	68.0	- 0.7	86	4	39	25	31	3.42	- 0.52	1.98	0.0	3	29	1	1	e.	W. A. Emmons.
St. Augustine.	St. Johns.	10	59	72.0	- 0.2	87	15	48	25	33	0.80	- 4.17	0.80	0.0	1	16	8	7	ne.	J. R. Palmer.
Sand Key.	Monroe.	46	6																	U. S. Weather Bureau.
St. Leo.	Pasco.	140	14	72.1	- 1.0	88	9	46	25	34	0.62	- 1.82	0.32	0.0	4	12	7	3	e.	G. Schneider.
Satsuma Heights.	Putnam.	98	1	68.8	- 0.5	85	5	41	25	34	0.28	- 4.07	0.15	0.0	2				ne.	Satsuma Co.
Switzerland.	St. Johns.	10	13	69.8	- 0.5	86	2	48	17	33	0.19	- 2.49	0.38	0.0	3	24	5	2	n.	W. C. Steele.
Tallahassee.	Leon.	192	24	67.8	- 0.1	88	5	41	25	31	0.73	- 2.53	0.20	0.0	4	18	5	8	ne.	W. H. Markham.
Tampa.	Hillsboro.	79	19	72.8	+ 0.2	87	9	46	25	37	1.06	- 0.97	0.40	0.0	3	23	4	4	e.	U. S. Weather Bureau.
Tarpon Springs.	Hillsboro.	20	16	73.1	+ 1.5	92	9	46	25	37	1.06	- 0.97	0.40	0.0	3	23	4	4	e.	A. P. Albaugh.
Titusville.	Brevard.	6	17	73.8	+ 0.7	90	10	48	20	22	0.35	- 5.08	0.35	0.0	1	12	9	10	e.	F. M. Taylor.
Wausau.	Washington.	250	12								0.00	- 2.08	0.00	0.0	0	16	15	0	s.	C. Jones.
Mississippi.																				
Aberdeen.	Monroe.	210	21	61.4	+ 0.3	94	5	29	25	48	1.89	- 0.08	1.54	0.0	3	23	2	6	n.	L. D. Godfrey, jr.
Agricultural College.	Okfuskeba.	424	19	63.8	- 0.6	94	5	33	25	38	0.65	- 1.32	0.65	0.0	1	21	5	1	n.	Prof. W. R. Perkins.
Bay St Louis.	Hancock.	28	16	70.0	+ 1.2	89	5	46	25	32	1.47	- 1.41	0.62	0.0	5	23	5	3	ne.	Brother Stanislaus.
Biloxi.	Harrison.	24	18	71.7	+ 3.0	94	5	44	25	32	1.40	- 1.58	0.51	0.0	4	23	2	4	se.	Miss M. Josie Pope.
Booneville.	Prentiss.	504	15	62.2	+ 0.5	89	5	34	13	35	1.78	- 0.81	0.76	0.0	4	24	6	1	se.	Dr. D. T. Price.
Brookhaven.	Lincoln.	500	21	66.8	+ 1.4	95	5	35	25	44	1.67	- 0.73	1.03	0.0	2	24	1	6	e.	W. J. Bee.
Columbia.	Maroon.	100	5								1.75	- 0.82	0.82	0.0	3	22	2	7	nw.	N. R. Drummond.
Columbus.	Lowndes.	250	21	62.4	- 0.9	95	5	31	25	53	1.44	- 0.87	1.12	0.0	3	22	2	7	ne.	J. B. Love.
Crystal Springs.	Copiah.	468	17	66.1	+ 0.2	91	7													

TABLE 2.--Daily precipitation for October, 1909. District No. 2, South Atlantic and east Gulf States.

Stations.	River basins.	Day of month.																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Virginia.																																	
Arvonia.....	James.....											.15			.05	.08				.06				.43	T.								0.77
Ashland.....	do.....											.72			.21	.06							.50					T.					1.49
Buchanan	do.....											.94	.12			.13				.10				.24									3.53
Callaville.....	Chowan.....					.36						.64						T.					.39										1.39
Cape Henry.....	Coast.....							T.				.01	.06		T.	.45			T.	T.		T.		.50	.01								1.03
Charlottesville.....	James.....											.95			T.		.33						.13		.20								1.08
Clarkesville	Roanoke.....												.60			.35								.40									1.15
Columbia.....	James.....											.06			.10	.08				.10				.40									0.74
Danville	Roanoke.....											.24	.57		T.	.32						.02	.17	.12									1.44
Diamond Springs.....	Coast.....																																
Dinwiddie.....	Chowan.....												.20			.07								.72									1.51
Hampton.....	Coast.....											.60	.20			.15	.15																1.05
Hot Springs	James.....											1.50	.15			.09								.82									3.56
Ivor.....	Chowan.....											.60	.20			.15	.15				T.												2.72
Lexington.....	James.....											.28				.16					T.			.28									1.46
Lynchburg.....	do.....											.02			.15	.04				.02		.04		.19									1.94
Newcastle	do.....											.12											.22										
Newport News.....	Coast.....											.37	.17		.04	.47					.02		.01		.78								1.86
Norfolk.....	do.....											.51	.01		.01	.45			T.	T.		T.		.34	.08								1.43
Petersburg.....	James.....											.30	.47		.10	.20			*	.16		.10	*	.71									2.04
Randolph	Roanoke.....											.04	.56			.44								.44									1.48
Richmond.....	James.....									T.		.20			.05	.15			.06	.31													0.77
Rocky Mount.....	Roanoke.....												.93			.18								.27									2.38
Sabot.....	James.....											.19				.11				.19				.71									1.20
Saxe.....	Roanoke.....											.53			.17	.25						.03		.30									1.30
Spottsville (near).....	Chowan.....											.68			.58	.22						.06		.60									2.14
Williamsburg.....	James.....											.15			.10	.15				.20		.10		.85									1.55
North Carolina.																																	
Beaufort.....	Bogue Sound.....					.07						.05				.35								.77									0.89
Belhaven.....	Pungo.....											.09				.32							.30										0.74
Brewers.....	Pedee.....			T.		.06	T.					2.61			.09	.32						.08		.05									3.21
Caroleen.....	Santee.....											.50			.40	.81						.10											1.81
Chalybeate Springs.....	Cape Fear.....				T.	T.						.23			.17	.40						T.		.57									1.37
Chapel Hill.....	do.....					.30						.64			.19	.50						.15		.74									2.52
Charlotte.....	Santee.....					.14						.20			.63	.29						.11		T.									1.37
Chimney Rock.....	do.....											.85			.61	.74						.05		.08									2.33
Clinton.....	Cape Fear.....				T.	.23						.35			.18	.11					T.												0.87
Eagletown.....	Chowan.....											.10	.05		.05	.45						.08		T.	.82								1.53
Edenton.....	Albemarle Sound.....											.23			T.	.80								.50									1.55
Fayetteville	Cape Fear.....					.08						.02	.40			.35						T.											0.85
Goldboro	Neuse.....					T.						T.	.63		T.	.27	.04						.12		.07								1.13
Graham	Cape Fear.....					.38						.28	.27			.56							.17		.55								2.21
Greensboro	do.....			.48		.53						.24	.40			.55						.05	.40										2.67
Greenville	Tar.....												.22			.27							.06		.12								0.67
Hatteras.....	Pamlico Sound.....					.05						.13			T.									.23									0.41
Henderson.....	Tar.....											.55			.15	.14								.38									1.22
Kinston.....	Neuse.....																																
Lenoir.....	Santee.....											1.80			.20	.61							.09										2.70
Lexington.....	Pedee.....				.25							.50			.30	.38						.31		.62									2.36
Lincolnton.....	Santee.....					.30						.74			.25								.50		.45								2.24
Louisburg	Tar.....											.86				.60							.05		.68								2.19
Lumberton	Lumber.....					.38						.14	.56			.34							.10		.01								1.53
Manteo.....	Roanoke Sound.....														.14									.83									0.97
Marion.....	Santee.....					T.	.08					T.	1.21		.33	.65						.02		.35									2.64
Moncure	Cape Fear.....					T.	.04					.11	.01			.55							.03		.34								1.11
Monroe.....	Pedee.....					.15						.15			.21							.80											1.31
Morgantown.....	Santee.....				.02	.02						.94			.40	.66						.02		.28									2.34
Mount Airy.....	Pedee.....					T.	.29	.01				.66			.04	.26						.14		.03									1.45
Mount Holly	Santee.....											.06	.10		.04	.76						.10	.02	T.								1.08	
Nashville	Tar.....											T.	.22			.45						.10		.50									1.27
Newbern.....	Neuse.....					T.						.14				.15								.48									0.77
Pinehurst.....	Lumber.....					.17						.22			.25	.40				T.		.12		.13									1.29
Pittsboro.....	Cape Fear.....																																



Stations	River basins.	Day of month.																																Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
<b>South Carolina—Cont'd.</b>																																		
Cheraw (2)...	Pedee...																																	
Clarks Hill...	Savannah...																																	
Clemson College...	do.												70			59	85					20		17									2.51	
Columbia...	Congaree...					95	02				06			1.15	43						78		04										3.43	
Conway...	Waccamaw...						82				82	56				12							15		09								2.56	
Darlington...	Pedee...						83				12					10					79												1.84	
Dillon...	Little Pedee...						66				85				72						39			10									2.72	
Effingham...	Lynches...						1.90				75				1.14							95											4.74	
Ferguson...	Santee...	T.							02		42				32									52		20							1.48	
Florence...	Pedee...						60				22	04			85								47		09								2.27	
Georgetown...	Coast...						2.04				34										T.		T.										2.27	
Greenville...	Saluda...										35	11			11	1.37							25	10									2.29	
Greenwood...	do.														1.22								35										1.67	
Health Springs...	Waterlee...					70	09				02				50	17							47										1.95	
Jacksonboro...	Combahee...						T.																										T.	
Kingstree (1)...	Black...						64				10				22									65		18							1.79	
Kingstree (2)...	do.																																	
Liberty...	Savannah...					T.				T.	60				30	95							10		05									2.00
Little Mountain...	Saluda...														38	1.12							41		10								2.01	
Newberry...	do.										11	01			92																			

TABLE 2.—Daily precipitation for October, 1909. District No. 2—Continued.

Stations	River basins.	Day of month.																												Total.			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
<i>Georgia—Cont'd.</i>																																	
St. George	St. Marys						.16																										0.16
St. Marys	do						T.				.13										.02						T.						0.15
Savannah	Savannah					.52					.34	.04											.01	.02			T.						0.93
Statesboro	Ogeechee										.07											1.02			.18		.01						1.28
Talbotton	Chattahoochee																																
Tallapoosa	Cooma									*	.15				T.	1.11					*	1.43											2.69
Thomasville	Ochlockonee					.04					*	.46		*	.28	1.09					T.	.50	T.	.27			.03						0.84
Tocona	Savannah										*										*	.43											2.26
Valdosta	Suwanee					*	.32														*	* T.			T.								0.32
Valona	Ogeechee										T.										.60												0.60
Washington	Savannah					T.					T.				*	.82						.87	.09	*	.43								2.20
Waycross	Satilla					* 2.02					*	.07										.06	.05										2.20
Waynesboro	Savannah										*	.30			*	.90										T.							1.20
West Point	Chattahoochee										*	.34			*	.55								*	.16								1.95
Woodbury	Flint										*	.29			*	.65					*	.47											1.41
<i>Florida.</i>																																	
Apalachicola	Coast																					.73			.46								1.19
Arcadia	Peace Creek										.43	.18									.16				.06			.18	.95				1.96
Archer	Waccasassa																																
Avon Park	Kissimmee						.04				.18	.06																					



Stations.	River basins.	Day of month.																																Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
<i>Alabama—Cont'd.</i>																																		
Fayette.....	Tombigbee.....																																	
Flomaton.....	Escambia.....										.40	.05										.40		.10									0.95	
Fort Deposit...	do.....										.62										T.				.61								1.23	
Gadsden...	Coosa.....										.66				121	.38						.60											2.76	
Goodwater...	do.....										.10					.10						.42											0.61	
Greensboro...	Black Warrior...									.16					.14							.21											0.51	
Greenville...	Escambia.....										1.38											.30			.09								1.77	
Hamilton.....	Tombigbee.....														.69						.42												1.11	
Highland Home..	Escambia.....									.81											.27			.32									1.40	
Livingston.....	Tombigbee.....																					2.24											2.24	
Lock No 4...	Coosa.....									.40					.04	.82						1.10											2.36	
Lucy.....	Chattahoochee...															T.						.51	T.		.57								1.08	
Maple Grove....	Coosa.....									.26				.18	.38							.33											1.15	
Mentone.....	do.....										1.00				1.13	1.82																	3.95	
Milstead...	Tallapoosa.....										.35					.28						.24											0.87	
Mobile.....	Coast.....							10													1.37			.13									1.60	
Montgomery....	Alabama.....									.13					.35							T.		.12									0.60	
Newbern.....	Black Warrior...									.32					.02						.15												0.49	
Oneonta.....	do.....									.10	.04				.94						.06	.49	.03										1.66	
Opelika...	Tallapoosa.....										.53				.30																			

\* Precipitation included in that of the next measurement.  
 \*\* Temperature extremes are from observed readings of the dry-bulb; means are computed from observed readings.  
 † Also on other dates.  
 ‡ Data are from standard instruments not supplied by the U. S. Weather Bureau.  
 §§ Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.  
 || Estimated by observer.  
 ||| Precipitation for the 24 hours ending on the morning when it is measured.  
 T. Precipitation is less than 0.01 inch rain or melted snow.  
 a, b, c, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

TABLE 3.—Maximum and minimum temperatures at selected stations, October, 1909. District No. 2, South Atlantic and east Gulf States.

Date.	Virginia.								North Carolina.																Charleston, S. C.				
	Lynchburg.		Norfolk.		Richmond.		Saxe.		Charlotte.		Eagletown.		Fayetteville.		Hatteras.		Newbern.¶		Raleigh.		Reidsville.		Salisbury.				Wilmington.		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.			Max.	Min.	
1...	73	44	72	56	72	50	81	41	75	54	.....	.....	80	50	70	61	77	48	75	54	75	47	80	47	74	56	74	61	
2...	73	40	68	56	68	47	76	34	75	52	.....	.....	78	45	70	58	77	46	74	51	78	44	79	44	75	54	76	62	
3...	74	39	67	56	68	48	75	36	76	53	.....	.....	78	47	70	59	75	48	73	49	80	44	80	45	75	52	79	58	
4...	68	44	67	52	68	47	70	36	76	57	.....	.....	80	51	70	58	75	51	70	50	73	49	80	43	73	58	80	62	
5...	68	52	67	55	69	48	70	48	70	57	.....	.....	77	53	71	60	76	52	70	52	64	51	70	55	72	56	79	68	
6...	70	52	68	55	70	49	79	41	68	55	.....	.....	75	55	70	62	74	53	69	55	68	50	71	52	72	57	74	64	
7...	77	43	71	55	73	49	80	40	74	53	.....	.....	79	48	71	62	77	50	74	52	80	47	78	47	75	55	74	63	
8...	79	43	74	51	77	48	81	42	76	53	.....	.....	81	48	72	63	80	48	77	52	82	48	80	46	77	54	75	62	
9...	80	44	74	60	77	52	82	39	79	51	.....	.....	84	47	74	65	84	51	80	54	82	48	82	44	79	54	79	64	
10...	77	45	74	59	73	52	79	41	80	58	.....	.....	85	53	74	64	80	53	78	55	81	49	82	49	78	55	78	67	
11...	71	40	78	61	73	58	74	49	73	58	.....	.....	80	60	79	67	80	58	74	59	75	60	76	61	73	65	81	65	
12...	60	41	70	55	67	47	69	41	68	46	.....	.....	77	49	75	65	79	55	71	49	70	43	73	42	75	55	77	55	
13...	54	34	57	45	55	36	55	30	58	37	.....	.....	64	38	68	56	65	42	58	39	61	33	61	33	62	45	67	49	
14...	52	37	60	41	52	43	59	40	62	46	.....	.....	64	37	71	52	73	36	59	40	54	37	61	40	70	47	74	52	
15...	60	48	61	52	61	49	57	48	63	52	.....	.....	71	55	72	57	75	42	66	49	65	47	61	49	74	56	77	60	
16...	59	39	62	45	58	41	64	38	65	45	.....	.....	74	44	62	56	77	42	64	45	65	40	68	42	66	47	72	52	
17...	68	32	66	44	65	38	71	29	72	44	.....	.....	78	37	69	51	76	36	71	43	74	39	74	36	75	47	73	52	
18...	81	44	79	55	78	48	81	40	77	51	.....	.....	81	48	74	57	82	43	78	51	82	45	81	44	77	52	75	58	
19...	59	37	56	49	56	42	70	48	64	50	.....	.....	67	50	68	54	67	44	65	48	68	47	69	50	64	49	78	61	
20...	59	32	58	47	58	36	63	29	60	48	.....	.....	64	38	65	54	68	42	60	42	65	41	64	48	65	45	65	57	
21...	68	44	72	49	64	43	69	39	64	49	.....	.....	75	45	73	58	80	42	70	46	64	46	65	48	73	50	74	59	
22...	79	50	77	61	79	57	71	40	77	57	.....	.....	83	60	76	66	84	51	79	59	82	56	81	57	79	59	78	62	
23...	73	46	79	56	77	49	81	40	77	48	.....	.....	84	62	76	64	84	51	80	53	79	49	79	51	78	59	77	63	
24...	30	42	58	46	54	41	67	40	55	40	.....	.....	73	43	74	49	58	49	56	41	59	39	63	39	71	44	78	49	
25...	61	33	54	41	56	38	68	29	69	33	.....	.....	64	32	56	46	61	33	60	35	65	29	64	29	60	38	60	43	
26...	67	30	64	40	66	36	69	29	64	40	.....	.....	70	33	61	46	66	34	67	38	70	39	67	32	66	44	68	50	
27...	70	37	72	46	71	41	75	32	70	44	.....	.....	77	38	70	57	77	37	72	47	76	41	73	47	72	53	71	57	
28...	56	38	61	44	57	39	64	35	64	46	.....	.....	68	43	63	51	68	43	63	42	66	38	65	39	67	49	70	55	
29...	55	33	52	41	53	34	58	20	61	36	.....	.....	62	30	56	45	59	33	56	34	67	29	62	29	59	39	62	48	
30...	65	31	56	42	59	33	66	24	70	38	.....	.....	70	30	58	47	80	30	65	35	70	34	72	32	63	39	66	51	
31...	78	36	70	45	78	44	81	32	73	49	.....	.....	80	37	70	47	80	34	77	46	80	43	78	40	75	46	71	53	
Mns	67.2	40.6	66.8	50.1	66.2	44.6	71.0	37.1	69.2	48.4	.....	.....	74.9	45.4	69.3	56.7	74.6	44.4	69.4	47.3	71.6	43.6	72.2	43.9	71.5	51.0	73.3	57.5	

Date.	South Carolina.										Georgia.																			
	Columbia.		Conway.¶		Georgetown.		Greenville.¶		Newberry.		Society Hill.		Trotter.		Adairsville.¶		Albany.¶		Atlanta.		Augusta.		Dalton.				Macon.			
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.			Max.	Min.	Max.	Min.
1...	80	52	74	49	72	56	77	47	80	50	74	53	82	41	80	49	87	52	79	60	82	53	76	52	84	53	80	61		
2...	79	53	79	49	77	54	77	53	80	53	73	52	80	49	81	48	87	54	80	53	81	54	76	48	83	52	78	59		
3...	79	54	80	45	77	52	77	51	80	48	73	55	80	48	79	46	87	57	81	58	81	55	76	49	84	53	79	61		
4...	84	60	80	49	79	54	79	51	82	53	77	55	84	49	87	57	90	58	85	63	87	55	82	54	88	55	83	64		
5...	79	60	77	57	75	61	69	55	78	56	74	57	77	58	82	53	92	59	82	60	81	60	77	55	85	62	82	68		
6...	73	60	75	60	74	62	65	60	70	60	77	51	84	58	83	57	84	62	79	57	69	64	71	57	70	60	76	66		
7...	76	56	77	53	73	57	75	56	78	56	72	52	79	54	80	53	82	62	76	58	78	59	71	54	78	61	76	62		
8...	77	52	79	51	74	56	76	49	78	49	74	51	76	53	79	53	82	62	76	57	78	52	74	49	78	56	77	60		
9...	79	53	84	52	78	57	80	49	81	49	75	58	77	53	79	49	86	59	77	56	81	52	73	57	82	53	79	60		
10...	82	56	82	55	79	59	78	52	83	53	77	64	81	57	79	56	87	61	77	59	81	58	73	57	80	58	80	66		
11...	80	60	82	64	79	61	72	39	79	64	79	50	79	58	81	50	84	64	69	53	79	56	77	49	75	55	83	66		
12...	72	48	79	50	76	55	67	43	72	44	72	43	68	48	71	45	75	48	57	43	70	50	61	46	68	46	75	55		
13...	65	40	67	41	66	45	66	34	64	34	62	41	73	47	59	32	71	46	59	38	65	40	57	33	65	40	68	48		
14...	67	44	72	39	73	45	59	35	68	41	64	57	73	47	58	48	85	46	71	51	66	43	55	41	79	46	79	53		
15...	68	55	78	53	76	61	67	47	67	58	68	45	73	56	67	47	78	50	64	52	69	53	60	45	73	54	78	61		
16...	68	46	71	43	70	56	73	38	69	39	65	40	70	41	60	38	77	44	66	48	69	47	64	45	70	42	72	52		
17...	76	44	78	39	72	46	77																							



TABLE 3.—Maximum and minimum temperatures at selected stations, October, 1909. District No. 2—Continued.

Date.	Georgia.						Alabama.												Florida.										
	Thomasville.		Waycross. §§		West Point. §§		Anniston.		Bermuda.		Birmingham.		Eufaula. §§		Mobile.		Montgomery.		Tuscaloosa. §§		Uniontown.		Avon Park.		Fort Myers.		Gainesville. §§		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1...	88	51	91	51	91	46	83	48	84	54	84	45	85	66	80	59	85	47	88	49	82	73	84	71	83	63	87	58	
2...	88	55	90	54	85	49	83	45	87	49	83	50	84	49	84	59	83	55	88	48	85	50	87	70	84	72	86	58	
3...	85	55	89	52	89	47	85	46	90	50	88	53	88	50	88	60	86	55	89	48	88	50	85	68	85	69	84	60	
4...	86	56	89	53	94	52	89	51	93	51	90	61	87	57	80	62	91	57	92	48	91	57	86	64	85	68	85	62	
5...	92	60	92	62	87	54	89	54	94	54	91	63	89	52	91	66	91	63	93	55	94	61	86	67	84	71	89	62	
6...	89	64	89	60	73	57	82	59	93	54	89	63	82	55	92	65	85	59	90	55	91	60	83	69	87	71	89	64	
7...	82	61	82	59	78	62	78	59	84	62	83	62	79	58	85	71	81	65	84	56	81	58	87	70	88	71	86	61	
8...	83	62	83	60	80	57	81	60	86	57	84	64	80	60	85	70	82	60	85	63	85	58	86	66	87	68	85	73	
9...	86	61	86	59	82	52	80	54	84	56	80	63	82	56	80	70	84	57	85	62	84	57	88	65	87	69	90	66	
10...	84	62	84	64	86	53	81	55	61	72	55	83	56	81	61	84	62	84	62	77	61	83	70	85	71	85	66	63	
11...	81	52	86	61	74	54	72	47	76	50	71	47	75	57	76	55	74	56	72	48	77	49	80	71	75	72	83	63	
12...	77	47	80	53	68	45	61	36	68	44	59	44	68	43	71	53	65	49	67	45	83	68	81	68	83	55	82	52	
13...	74	45	74	47	64	38	65	33	72	38	66	39	68	38	72	52	68	43	67	35	68	40	79	58	78	62	76	53	
14...	83	47	83	45	79	40	78	60	83	47	79	59	81	40	81	65	82	55	82	37	84	52	83	52	78	58	85	51	
15...	84	51	85	54	72	57	69	43	81	61	70	53	74	50	84	64	72	56	72	54	79	55	88	54	81	61	88	52	
16...	78	44	88	41	71	42	72	39	84	43	73	47	73	42	80	55	75	48	72	44	81	48	80	60	80	64	78	55	
17...	81	45	82	41	80	45	81	47	81	47	82	58	77	44	82	57	83	50	83	44	85	46	82	58	81	62	82	52	
18...	83	52	86	50	80	48	82	48	84	47	84	62	80	47	81	60	83	54	84	43	84	49	85	64	83	64	84	53	
19...	86	58	88	56	80	50	82	53	81	54	83	61	82	48	82	65	82	59	84	50	82	54	85	67	83	64	86	62	
20...	77	64	76	60	65	52	68	55	77	64	73	60	72	55	76	68	76	60	78	53	78	65	85	69	84	73	85	66	
21...	83	66	82	63	70	55	77	55	80	65	74	58	73	55	82	67	77	60	76	58	85	63	85	70	83	72	82	63	
22...	83	63	87	57	76	55	81	53	85	57	81	60	76	56	84	65	82	56	81	56	86	57	85	66	84	69	83	61	
23...	85	57	85	58	80	54	76	45	84	59	74	49	79	54	80	57	80	50	81	56	81	64	87	61	82	65	82	61	
24...	62	41	66	46	56	41	56	34	62	42	55	39	59	41	64	47	59	43	74	56	65	40	84	65	80	67	67	53	
25...	68	36	71	37	61	32	65	28	68	33	64	36	61	31	66	43	65	35	63	34	66	32	80	52	78	68	75	44	
26...	64	52	81	45	71	35	69	40	74	39	68	50	69	34	72	51	71	44	68	34	75	40	84	60	83	63	81	48	
27...	77	46	80	52	73	39	73	41	79	43	75	51	73	37	78	55	78	44	78	43	81	44	79	67	78	70	83	59	
28...	78	46	80	45	72	40	70	38	79	47	71	47	74	38	78	56	75	62	73	46	78	50	72	67	81	70	80	61	
29...	76	45	79	42	67	39	70	33	75	41	70	45	71	37	79	50	77	44	68	38	78	40	80	65	79	67	79	57	
30...	77	53	78	48	76	40	75	43	78	41	75	47	72	37	79	50	77	44	68	39	79	47	83	64	80	63	81	56	
31...	78	48	80	47	75	41	75	54	78	48	76	56	75	40	76	63	77	50	76	39	79	47	83	64	80	63	81	56	
Mns	80.7	53.1	83.0	52.3	76.0	47.5	75.8	47.0	80.7	50.2	76.4	53.4	76.3	47.2	80.0	59.7	77.9	53.1	78.6	48.3	80.6	51.1	83.3	64.7	82.3	67.5	82.8	59.4	50.3

Date.	Florida.												Mississippi.											
	Jacksonville.		Jupiter.		Key West.		Miami.		Orlando.		Pensacola.		Tallahassee. §§		Tampa.		Columbus. §§		Hattiesburg. §§		Jackson.		Meridian.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	81	65	87	75	88	78	91	73	85	68	84	65	84	61	83	70	86	45	90	56	87	50	82	52
2...	83	64	82	74	86	74	87	73	86	68	86	63	85	69	86	65	88	44	91	54	85	50	81	47
3...	80	66	84	77	86	77	85	74	85	68	85	66	83	61	86	66	92	44	94	55	88	46	85	44
4...	83	62	84	73	86	76	85	76	85	62	84	65	86	62	86	64	94	48	96	56	94	51	90	51
5...	84	65	82	76	82	73	85	76	85	61	91	68	88	63	86	66	95	51	96	54	93	53	90	53
6...	85	69	80	78	79	71	80	70	83	66	87	72	84	66	82	69	91	53	95	55	93	54	88	53
7...	81	62	80	72	78	72	76	68	85	68	80	69	81	62	86	68	85	54	93	58	93	56	81	60
8...	80	66	83	74	84	74	85	73	86	63	77	70	81	64	86	67	86	60	94	57	90	60	84	61
9...	80	68	84	78	84	72	82	74	87	65	78	70	83	62	87	67	79	62	92	58	74	66	81	64
10...	82	67	80	72	78	73	81	73	85	65	78	66	82	63	84	68	71	62	90	60	76	58	72	51
11...	82	68	79	73	78	73	78	70	87	71	76	58	78	64	82	69	74	41	78	62	74	45	71	48
12...	79	58	81	66	81	72	84	71	81	65	72	55	76	51	78	64	62	42	72	46	66	45	64	47
13...	73	52	80	64	80	72	85	68	79	55	69	52	72	49	80	59	67	32	74	42	76	39	67	31
14...	80	57	80	68	82	72	83	70	83	48	77	69	81	50	81	57	85	32	87	44	86	61	83	51
15...	85	63	82	65	81	73	85	65	87	52	84	68	82	55	82	62	77	49	88	52	82	56	78	50
16...	76	55	80	66	81	71	85	65	80	52	78	61	79	54	78	57	79	39	86	45	86	43	78	44
17...	76	54	80	72	80	72	83	72	81	48	76	63	78	53	81	54	86	49	86	46	89	48	82	43
18...	80	63	81	75	81	74	85	75	83	58	75	64	82	57	84	63	87	46	87	52				

**Climatological Data for October, 1909.**  
**DISTRICT No. 3, OHIO VALLEY.**

FERDINAND J. WALK, District Editor.

**GENERAL SUMMARY.**

Unseasonably cool weather, as a rule, prevailed over the district during nearly the whole month. Frost and freezing temperatures were of frequent occurrence. In West Virginia, western Pennsylvania, Kentucky, and over much of the district north of the Ohio River the temperature averaged the lowest for any October, with one or two exceptions, during the past twenty years. Rainfall was somewhat in excess of the average October amounts in Indiana and in parts of Illinois and West Virginia, and was either nearly normal or below over the rest of the district. Snow fell on several days in various parts of the district. As much as 4 inches fell during the month at one or two stations in West Virginia, while flurries occurred as far south as Tennessee and northern Georgia.

**TEMPERATURE.**

The temperature was below normal at all stations in the district. Over considerable portions of western Tennessee and central-southern Kentucky the deficiency was less than 1°, while over the Cumberland table-land of western Tennessee, in southwestern Kentucky, the Scioto Valley of Ohio, and the Allegheny Basin of Pennsylvania the deficiency was 6° or more, and over the north-central portion of Indiana it was more than 7°. Over the rest of the district the temperature was from 2° to 4° below the October average. The month began comparatively warm and quite warm weather prevailed during the first decade, particularly the period 7-10th, when maximum temperatures of 70° to 90° occurred generally. During the second decade it was universally unseasonably cold, freezing temperature and killing frost occurring in practically all parts of the district. The first two or three days of the third decade and the last two days of the month were quite warm, the maximum temperature registering between 70° and 80° over large areas. Unseasonably cold weather again prevailed during the period 25-29th. In West Virginia temperatures of 14° to 20° were registered on the morning of the 29th.

**PRECIPITATION.**

Clear weather prevailed over the district the first 8 or 9 days, there being only a few scattered light showers in any section. In the period 10-12th, a general storm passed over the upper Mississippi and Ohio valleys, bringing general and quite heavy rains. The rainfall was especially heavy in West Virginia, Maryland, Pennsylvania, western Virginia, North Carolina, Tennessee, and parts of Kentucky. Another general storm caused rains on the 14-15th, when they were especially heavy in the southern parts of the district. In the period 17-24th, moderate to heavy rains were more or less general. The heaviest occurred in Illinois, Indiana, Pennsylvania, and West Virginia. After the 24th there was no rain of consequence. The rainfall for the month was deficient, averaging less than 2 inches over southern Illinois, the greater portion of Kentucky, the western portion of West Virginia, eastern Ohio, and extreme western Pennsylvania. The amount was less than 1 inch in southwestern Illinois and in the Mahoning Valley of Ohio. There were between 4 and 5 inches in the upper basin of the Tennessee River, in the southeastern Monongahela Basin in West Virginia, in the Miami Basin of Ohio, and in central and southern Indiana. Over the remainder of the district the rainfall was between 2 and 4 inches, about the average seasonal amount. Snow occurred in the mountains of West Virginia on the 11th, in Ohio, eastern Kentucky, and Indiana on the 12th; in Tennessee on the 13th, and in West Virginia, northern Indiana, Illinois, and Tennessee on the 15th; in Indiana and

Illinois on the 20th; in West Virginia on the 23d; in most of the district north of the Ohio River, and in West Virginia, southwestern Virginia, and Tennessee on the 24th; and in northern Georgia on the 26th. The amounts were generally not more than traces, however, except in West Virginia, where the total fall was as much as 4 inches at one or two points. Ice formed in northern Georgia on the 13th.

Rainfalls of 2.50 inches, or more, in twenty-four hours occurred as follows:

Great Kanawha watershed: 2.55 inches at Lewisburg and 2.50 inches at Marlinton, W. Va., and 2.82 inches at Galax, Va., on the 11th.

Tennessee watershed: 2.98 inches at Andrews, and 2.68 inches at Bryson City, N. C., on the 14th; 3.55 inches at Bridgeport, Ala., on the 13-14th; 2.67 inches at Tusculumbia, Ala., and 3.15 inches at Waynesboro, Tenn., on the 14th.

White River watershed: 2.60 inches at Eminence, Ind., on the 23d, and 3.13 inches at Mount Vernon, Ind., on the Ohio River watershed, on the 20th-21st.

In addition to the above, the following heavy rainfalls occurred for short periods:

Dunlap, Tenn., 1.05 inches in thirty minutes on the 15th, and at Palmetto, Tenn., 1.75 inches in thirty minutes on the 14th.

During the night of the 13th and early morning of the 14th severe storms, tornadic in character, occurred in northern Alabama and in the southwest and south-central counties of Tennessee. Trees were uprooted, a few houses and barns were blown down in Madison County, Alabama, and considerable damage done to timber, buildings, telegraph, and telephone lines. No lives were lost in Alabama, but in Tennessee 29 persons were killed and over 100 injured. The property loss amounted to \$150,000, or more. Heavy hail attended these storms in localities in both these States. The section director at Nashville, Tenn., reports as follows:

Very severe local storms, assuming the violence of tornadoes in some places, occurred in the southwestern and south-central counties on the afternoon of the 14th. The storms were most destructive in Madison, McNairy, and Hardin counties. The number of persons reported killed in Madison County was 1; Hardin, 20; McNairy, 8. The reports were not considered entirely reliable and complete. Probably 100 people, in all, were injured. Many houses were destroyed or damaged, fences, timber, and crops were blown down and a considerable number of stock killed. The property loss at Clifton, Wayne County, was \$5,000; Hamburg, Hardin County, \$60,000; Buford Station, Giles County, \$9,000; Pittsburg Landing, Hardin County, \$75,000; Stantonville, McNairy County, \$1,500. At Dunlap hailstones, half round in shape, measured 5 inches in diameter.

Severe hailstorms on the same dates were also reported from northern Georgia. See report on the severe hailstorm at Atlanta, Ga., in summary for District No. 2.

A violent storm of reported tornadic character swept over Cambridge Springs and French Creek Valley in Crawford County, Pa., the afternoon of the 21st, injuring several persons, wrecking a score or more of residences and buildings, destroying or damaging over 100 barns and outbuildings, uprooting trees, tearing down telegraph, telephone, and electric light poles, and leveling fences.

The 22-23d a general storm passed over the central and upper Ohio valleys, attended by severe thunderstorms and squalls. Considerable damage resulted, especially in the northern and eastern parts of Kentucky. These storms, as far as could be learned, were not tornadic in character, but were simply windsqualls accompanying thunderstorms. There were no fatalities, although there were a number of narrow escapes. The damage was greatest in the vicinity of Louisville and



Frankfort, Ky. In these localities there were a number of tobacco barns, farm houses, and fences blown down. Haystacks and shocked corn also suffered to a large extent. There was also considerable damage to orchards, shade trees, and telegraph and telephone wires. Some minor damage also resulted from these storms in the portions of Indiana and Ohio bordering the Ohio River.

On the 15th local storms of tornadic characteristics de-

stroyed several houses and killed a number of cattle in the vicinity of Lafayette, Ga.

During a thunderstorm near Robinson, Ill., on the 23d, 70,000 barrels of crude oil were destroyed.

The streams, on account of the timely rains, were, in the main, at higher stages during the month than in October of last year. Droughty conditions, which frequently prevail during the month of October, were absent.

TABLE 1.—Climatological data for October, 1909. District No. 3, Ohio Valley.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.					Precipitation, in inches.					Sky.					Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		
<b>New York.</b>																				
Allegany	Cattaraugus	1,441	3	45.2		80	9	16	30	44	3.91		1.09	9.2	12	10	3	18	nw.	Charles E. Whitney.
Bolivar	Allegany	1,800	13	43.7	- 5.1	83	9	14	30	51	3.06	- 0.08	0.72	0.2	13	9			sw.	Lowell Andrus.
Franklinville	Cattaraugus	1,598	12	43.4	- 6.1	80	9	15	30	44	4.52	+ 0.90	1.65	1.0	15	8			sw.	John W. Kales.
Jamestown	Chautauqua	1,365	19																	
Olean	Cattaraugus										3.00		1.34	0.0	11	11	9	11		John W. Alles.
<b>Maryland.</b>																				
Deer Park	Garrett	2,457	15	44.0	- 4.3	74	8	20	30	47	3.51	+ 1.24	1.50		5					S. P. Specht.
Grantville	do.	2,351	15	45.0	- 4.9	77	9	23	30	41	4.09	+ 1.66	2.00	T.	6	13	9	9		J. S. Miller.
Oakland	do.	2,461	9	45.0	- 2.7	76	7	22	30	46	4.41	+ 1.53	1.73	0.7	9	14	8	9	w.	R. E. Weber.
<b>Pennsylvania.</b>																				
Aleppo	Greene	1,135	8	49.2		85	9	22	29	47	2.19		0.75	T.	6	21	1	9	w.	J. S. Hinerman.
Baldwin	Butler	1,404	3	46.8		82	8	23	20	44	2.55		1.50	T.	10	12	3	16	w.	S. H. Templeton.
California	Washington	770	6	49.8		84	10	28	20	46	3.00		1.40	T.	4	19	5	7	w.	Prof. E. H. Knabenschue.
Claysville	do.	1,127	5	49.1		85	9	24	29	46	2.12		0.84	T.	8	14	9	8	w.	E. T. Buchanan.
Derry Station	Westmoreland	1,172	12	48.6	- 6.3	84	9	25	30	50	2.73	- 0.08	1.54	T.	5	10	9	12	w.	D. M. Wineman.
Franklin	Venango	955	35	46.2	- 6.2	82	8	21	30	45	1.32	- 1.56	0.55	T.	5	11	8	12	w.	Venango Water Co.
Freeport	Armstrong	772	31								2.16	- 0.33	0.79	T.	8					Mrs. A. R. Burtner.
Greensburg	Westmoreland	1,100	1	47.8		83	10	26	30	42	3.14		1.39	T.	9	12	8	11	sw.	M. W. Crownover.
Greenville	Mercer	950	13	46.7	- 2.9	83	9	20	20	50	2.11	- 1.11	1.19	T.	10	17	6	8	nw.	A. M. Orr.
Grove City	do.	1,250	2	46.3		81	8	21	20	48	1.26		0.35	T.	13	8	6	17	w.	H. W. Harmon.
Indiana	Indiana	1,350	12	49.1	- 1.9	85	9	23	30	41	2.21	- 0.89	1.30	T.	10	15	4	12	s.	Rev. J. M. Welch.
Irwin	Westmoreland	884	12	50.2	- 5.2	87	10	25	20	48	3.14	+ 0.81	1.59	T.	6	15	9	7		J. B. Gallagher.
Johnstown	Cambria	1,184	21								3.56	+ 0.97	1.23	T.	12					E. C. Lorentz.
Lycippus	Westmoreland	1,420	17	49.2	- 5.3	81	9	27	30	36	3.28	+ 0.84	1.32	T.	9					Murray Forbes.
Pittsburg	Allegheny	842	39	49.6	- 5.3	80	10	31	13	34	2.36	0.00	1.24	T.	5	9	12	10	w.	U. S. Weather Bureau.
Saegertown	Crawford	1,116	18	46.7	- 3.6	83	9	20	20	48	1.73	- 1.25	0.48	T.	17	7	12	12	w.	J. G. Apple.
St. Marys	Elk	1,740	11	44.9	- 5.0	86	8	20	30	50	3.04	0.00	2.12		6	8	12	11		Wm. E. Wittman.
Skidmore	Lawrence	1,000	5	47.8		86	8	23	30	50	0.95		0.35	T.	4	15	0	16	sw.	W. H. Stoner.
Somerset	Somerset	2,250	53	46.2	- 2.2	82	8	26	13	48	2.36	- 0.44	0.78	T.	9	6	15	10	nw.	W. M. Schrock.
Uniontown	Fayette	999	21	50.0	- 4.0	84	10	28	20	39	3.44	+ 0.44	1.58	T.	6	7	11	13	n.	Wm. Hunt.
Warren	Warren	1,137	20	45.0	- 5.9	78	9	23	20	42	2.96	- 0.03	1.54	2.0	6	12	2	17	nw.	Anna Simpson.
<b>West Virginia.</b>																				
Aborvale	Pocahontas		1																	W. E. Arbogast.
Bancroft	Putnam		5	51.6		84	10	23	29	50	2.88		1.53	0.0	8	21	3	7	nw.	James Hill.
Beckley	Raleigh	2,440	10	50.1	- 3.9	87	7	20	28	54	2.19	- 0.01	1.07	0.0	4	17	8	6	w.	John A. Ewart.
Ben's Run	Pleasants	622	6	52.2		87	9	28	17	45	2.27		0.90	0.0	8	22	3	6		J. D. Riggs.
Bluefield	Mercer	2,563	12	51.6	- 3.6	77	20	21	25	38	2.49	- 0.10	1.41	0.0	7	22	4	5		Agent, N. & W. Ry. Co.
Buckhannon	Upshur	1,472	13	47.8	- 5.0	78	4	19	29	48	5.27	+ 2.13	1.40	T.	7	19	3	9		H. A. Darnall.
Cairo	Ritchie	667	7	50.6		86	10	18	29	49	2.41		0.95	0.0	7	18	7	6	w.	Van A. Zevely.
Central Station	Doddridge	900	9	47.8	- 7.0	83	9	16	29	48	2.03	- 0.26	0.75	T.	10	15	9	7	se.	G. W. Sherwood.
Charleston	Kanawha	598	6	54.8		78	9	26	29	37	2.05	- 0.44	0.86	0.0	5	16	7	6	w.	R. C. Hewes.
Creston	Wirt	612	7	50.6		82	9	20	17	44	2.67		0.76	0.0	10	19	3	9	w.	J. M. Reed.
Cuba	Jackson	544	7	49.5		85	9	18	29	47	2.51		0.90	0.0	9	18	7	6	nw.	C. T. Perry.
Doane	Wayne		4																	G. W. Jude.
Elkhorn	McDowell	1,933	14	51.8	- 3.6	76	8	23	29	41	0.60	- 1.75	0.38	0.0	3	19	10	1	sw.	J. J. Lincoln.
Elkins	Randolph	1,940	10	47.6	- 3.8	81	9	22	29	44	4.58	+ 2.16	1.86	T.	9	15	6	10	w.	U. S. Weather Bureau.
Fairmont	Marion	879	4								2.93	+ 0.45	1.52	0.0	11					H. Glenn Fleming.
Glennville	Gilmer	738	14	51.2	- 3.4	85	9	20	29	47	3.23	+ 0.37	0.90	0.0	7	18	3	10	sw.	John Holt.
Grafton	Taylor	985	16	50.3	- 4.5	86	9	22	29	50	3.45	+ 0.99	1.32	0.0	12	18	2	11		S. W. Wilson.
Green Sulphur Springs	Summers	1,600	12																	M. Gwinn.
Hinton	do.	1,400	13	52.0	- 4.1	75	9	24	29	38	2.66	+ 0.52	1.72	0.0	8	22	1	6	w.	R. R. Flanagan.
Huntington	Cabell	510	12	51.4	- 4.7	84	10	23	29	41	1.84	- 0.21	0.96	0.0	7	18	2	10	w.	L. H. Hutchinson.
Lewisburg	Greensbrier	2,200	8	49.0	- 4.0	82	9	18	28	45	3.59	+ 1.01	2.55	T.	4	16	3	9	w.	Geo. T. Argabrite.
Logan	Logan	665	7	57.0		88	9	25	29	47	1.75		0.85	0.0	6	12	18	1	w.	H. C. Ragland.
Lost Creek	Harrison	1,033	11	49.6	- 4.6	85	9	18	29	50	3.28	+ 1.00	1.40	0.0	7	20	4	7	w.	Allen Smith.
Madison	Boone	704	4	51.2		80	9	21	27	47	1.40		0.53	T.	8	18	8	5		S. E. Bradley.
Mannington	Marion	967	6	48.8		85	9	19	29	51	2.19		0.85	0.0	11	19	2	10	sw.	Jas. A. Morgan.
Morgantown	Monongalia	1,250	13	51.2	- 3.7	83	10	27	29	37	2.55	- 0.43	1.22	T.	8	19	4	7	w.	Horace Atwood.
Marlinton	Pocahontas	2,169	10			67	8	14	29		3.31		2.50	T.	7	16	1	6	w.	N. C. McNeil.
Moundsville	Marshall	640	6	51.4		86	9	24	29	47	2.02		0.68	0.0	9	21	3	7	sw.	J. E. Matthews.
New Cumberland	Hancock	987	9	48.4	- 5.6	85	9	22	30	50	1.55		0.60	T.	5	14	3	14	w.	Frank S. Evans.
New Martinsville	Wetzel	634	14	52.2	- 4.1	88	10	25	29	48	2.09	- 0.29	0.84	0.0	8	24	2	5	sw.	Wm. Ankron.
Nuttallburg	Fayette	2,252	12	47.2		71	9	20	14	36	2.59	+ 0.39		T.	6	22	7	6	s.	Stephen Tully.
Parkersburg	Wood	638	21	50.8	- 3.8	81	10	23	29	36	1.74	- 0.70	0.83	0.0	8	18	7	6	s.	U. S. Weather Bureau.
Parsons	Tucker	1,662	7	47.0	- 5.5	83	9	22	30	49	4.35	+ 1.89	1.30	T.	6	16	4	10		J. W. Swisher.
Philippi	Barbour	1,192	10	49.9	- 4.8	84	9	21	29	50	4.21	+ 1.63	1.57	0.2	14	10	11	10	nw.	J. D. Dadsman.
Pickens	Randolph	2,785	16	46.5	- 5.4	77	9	19	29	38	5.09	+ 1.65		4.0		18	3	9	w.	Dr. J. L. Cunningham.
Pineville	Wyoming		1	53.2		88	9	20	29	53	2.70		1.40	0.0	6	11	10	3		E. H. Senter.
Point Pleasant	Mason	553	14	51.6	- 5.8	82	10	22	29	42	2.40	+ 0.08	0.76	0.0	7	9	7	15	ne.	D. Swain.
Powellton	Fayette	904	13	53.6	- 0.7	84	9	24	29	43	1.49	- 0.15	0.41	0.0	6	11	5	14	n.	H. Scott.
Princeton	Mercer	2,469	6	46.2		69	9	17	29	42	3.70		1.70	T.	4	14	13	4	w.	Wm. E. Turley.
Robertsburg	Putnam			50.8		85	8	21	29	48	2.57		1.00	0.0	7	15	7	7		Wm. E. Ryan.
Ryan	Roane	693	5	48.4		83	9	16	29	50	3.12		1.49	T.	8	18	6	7		H. F. Whisler.
Smithfield	Wetzel		5	47.6		77	9	21	29	43	4.11		2.31	0.0	7	18	5	8	ne.	A. M. McKown.
Spencer	Roane	710	6	49.2		86	9	15	29	53	2.28	- 0.3								



TABLE 1.—Climatological data for October, 1909. District No. 3—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.			
<b>Ohio—Cont'd.</b>																					
Cincinnati.	Hamilton.	628	39	52.7	- 4.3	81	8	29	25	35	3.02	+ 0.70	1.24	0.0	9	17	5	9	se.	U. S. Weather Bureau.	
Circleville.	Pickaway.	694	15	49.8	- 6.1	82	9	24	29	41	2.78	+ 1.14	0.96	T.	7	16	7	8	s.	Samuel W. Courtright.	
Clarington.	Monroe.	600	7	50.4		86	9	21	29	45	2.26		0.75	0.0	10	16	5	10	sw.	Col. S. Tschappat.	
Clarksville.	Clinton.	1,010	23																	E. T. M. Williams.	
Columbus (1).	Franklin.	918	32	49.9	- 4.2	79	9	29	13	29	2.77	+ 0.42	1.17	T.	10	15	9	7	sw.	U. S. Weather Bureau.	
Columbus (2).	do.	757	27	48.6	- 3.5	80	9	24	29	41	1.59	- 0.56	0.82	T.	5	12	13	6	w.	Ohio State University.	
Columbus (3).	do.		1																	Capt. Paul Mason.	
Columbus Reservoir.	do.																			Superintendent.	
Coshocton.	Coshocton.	700	27	50.0	- 4.3	82	7	24	29	42	3.04		1.35	T.	6	6	10	15	sw.	Mrs. Ada Jeffries.	
Dayton (1).	Montgomery.																			Edith E. L. Boyer.	
Dayton (2).	do.	927	13	47.8	- 6.6	82	9	21	29	45	4.36	+ 2.09	1.54	0.0	7	26	0	5	ne.	Mrs. D. D. Rist.	
Delaware.	Delaware.	1,325	20	50.8	- 2.0	85	9	26	13	38	2.19	- 0.17	0.87	T.	8	20	6	5	sw.	L. L. Hudson.	
Demos.	Belmont.	750	17	51.0	- 3.6	79	9	23	13	40	2.77	+ 0.89	1.29	T.	4	19	4	8	sw.	J. F. Dysart.	
Frankfort.	Ross.	1,005	25	46.6	- 3.0	81	8	20	20	48	1.55	- 0.94	0.53	T.	11	11	7	13	nw.	O. A. Cory.	
Garrettsville.	Portage.	960	25	48.4	- 4.2	80	9	22	29	42	3.00	+ 0.59	1.35	T.	6	19	2	10	sw.	S. M. Luther.	
Granville.	Licking.	1,000	19	48.2	- 4.7	77	9	21	29	38	2.34	+ 0.30	0.89	T.	6	14	12	5	w.	Dr. L. E. Davis.	
Gratiot.	do.	1,500	17	51.9	- 4.0	80	8	22	29	44	2.77	+ 0.53	1.07	0.0	4	18	6	7	nw.	W. B. Longstreth.	
Green.	Adams.	1,135	18	45.8	- 5.0	82	9	22	19	48	1.21	- 0.90	0.64	T.	7	15	12	4	sw.	W. F. Kenyon.	
Green Hill.	Columbiana.	1,060	24	48.8	- 3.2	78	8	26	13	36	4.21	+ 2.32	1.86	T.	7	11	13	7	s.	Jos. E. Bentley.	
Greenville.	do.																			G. A. Katzenberger.	
Hillsboro.	Highland.	575	27	52.6	- 2.6	84	9	22	29	47	2.09	- 0.39	0.90	0.0	7	17	5	9	sw.	Carey H. Roush.	
Ironton.	Lawrence.	975	22	51.0	- 5.4	83	8	25	13	34	5.25	+ 3.17	2.40	0.0	5	18	5	8	ne.	James Bull.	
Jacksonburg.	Butler.																			Dr. J. B. Owsley.	
Kenton.	Hardin.	1,087	17	47.2	- 5.2	78	9	23	19	36	1.94	- 0.01	0.72	0.0	5	13	13	5	n.	N. S. Martin.	
Killbuck.	Holmes.	898	14	50.0	- 5.2	80	9	24	29	37	2.68	+ 0.73	0.89	0.0	5	21	2	8	sw.	Geo. W. Nowells.	
Lancaster.	Fairfield.	900	6	49.4		83	8	18	29	48	2.94		0.56	T.	6	19	1	11	w.	R. L. Renshaw.	
Lawshe.	Adams.	710	26	49.4	- 4.1	84	10	20	29	44	2.27	- 0.03	0.81	T.	7	16	7	8	nw.	Ruth W. Hoffman.	
McConnelsville.	Morgan.	627	66	51.3	- 1.6	78	9	23	29	37	1.94	- 0.93	0.75	0.0	9	18	6	7	n.	C. H. Morris.	
Marietta.	Washington.	980	19	49.0	- 5.5	85	9	21	29	45	2.62	+ 0.54	1.20	T.	6	14	8	9	sw.	Prof. T. D. Biacoe.	
Marion.	Marion.	1,200	17	48.6	- 3.1	80	7	21	29	40	2.73	+ 0.82	1.05	T.	4	15	9	7	sw.	E. H. Raffensperger.	
Milfordton.	Knox.	875	16	47.4	- 6.3	82	9	17	29	50	2.16	- 0.20	0.77	0.0	7	17	7	7	nw.	L. H. Burgess.	
Milligan.	Perry.	1,145	18	46.8	- 5.5	81	9	22	19	46	1.17	- 0.88	0.50	T.	6	8	17	6	nw.	V. C. Eyeland.	
Millport.	Columbiana.	850	9	47.5		81	9	21	17	46	1.82	- 0.12	0.75	T.	4	19	5	7	sw.	G. F. Copeland.	
Nelle.	Coshocton.	1,050	25	50.0	- 3.0	85	9	21	27	41	1.74	- 0.72	0.73	T.	9	16	4	11	w.	E. L. Gamertsfelder.	
New Alexandria.	Jefferson.	1,100	17	47.9	- 3.8	81	9	22	29	38	1.86	- 0.35	0.95	T.	7	18	4	9	nw.	Mrs. Mary K. Pennell.	
New Berlin.	Stark.	788	11																	Clayton Holl.	
New Richmond.	Clermont.	1,053	16	47.0	- 4.6	82	9	21	20	48	1.73	- 0.34	1.05	T.		19	0	12	sw.	Sam. C. Scott.	
New Waterford.	Columbiana.	1,095																		C. B. Wade.	
North Lewisburg.	Champaign.	945	21																	J. N. Ridenour.	
Orangeville.	Trumbull.	1,050	17	48.0	- 5.3	80	9	22	25	38	3.25	+ 0.88	1.05	T.	8	14	14	3	sw.	L. C. Burckhalter.	
Pataskala.	Licking.	1,018	15	49.9	- 5.4	81	9	25	19	37	2.21	+ 0.31	0.83	T.	5	16	11	4	sw.	Louis Hardtla.	
Philo (1).	Muskingum.																			F. E. Stewart.	
Philo (2).	do.	1,130	17	48.7	- 5.6	79	7	20	29	45	2.58	+ 1.40	1.46	T.	7	18	10	3	sw.	W. G. Branch.	
Plattsburg.	Clark.	781	26	53.6	- 1.8	85	10	27	25	39	1.85	- 0.08	1.05	0.0	7	16	7	8	w.	Dr. H. A. Schirman.	
Pomeroy.	Meigs.	527	79	51.5	- 4.1	80	10	28	25	37	2.32	- 0.39	0.81	T.	7	17	3	11	w.	J. B. Gish.	
Portsmouth.	Scioto.	990	17	47.8	- 3.3	80	9	21	25	41	1.43	- 0.95	0.72	0.0	6	20	6	5	w.	T. B. Arnett.	
Rittman.	Wayne.	1,100	18	46.0	- 6.3	81	9	20	29	38	2.17	+ 0.27	1.15	T.	7	11	16	4	sw.	H. B. Blake.	
Shenandoah.	Richland.	985	15	51.1	- 3.0	83	9	24	29	41	3.52	+ 1.17	1.33	0.0	10	14	8	9	nw.	Miss M. C. Sheridan.	
Sidney.	Shelby.	1,080	11	49.2	- 6.8	80	9	27	29	34	2.68	+ 0.39	1.00	T.	8	19	7	5	n.	W. A. Webster.	
Somers.	Perry.																			H. R. McClintock.	
Springfield.	Clark.	696	17	52.5	- 4.0	84	10	21	29	41	2.13	+ 0.05	0.90	0.0	4	15	7	9	w.	D. D. Thomas.	
Summerfield.	Noble.	1,031	14	49.0	- 5.0	82	7	21	29	44	2.97	+ 0.79	1.66	T.	4	13	13	5	sw.	Prof. J. H. Williams.	
Thurman.	Gallia.	1,127	12	47.5	- 4.1	84	9	21	20	46	0.80	- 1.41	0.33	T.	6	13	8	10	nw.	M. D. McKelvie.	
Urbana.	Champaign.	590	27	51.0	- 4.2	84	8	20	29	47	1.98	- 0.16	0.72	T.	9	18	1	12	w.	D. Lorbach.	
Warren.	Trumbull.	700	25	50.0	- 5.5	80	8	25	25	36	3.71	+ 1.72	1.50	0.0	6	17	7	7	sw.	Charles Michener.	
Waynesville.	Pike.	1,030	25	47.8	- 3.2	81	9	22	29	43	2.16	- 0.15	1.02	0.2	6	13	5	13	ne.	Experiment Station.	
Wooster.	Wayne.																			G. R. Patton.	
Youngstown.	Mahoning.																			S. G. Sprague.	
Zanesville.	Muskingum.																				
<b>Virginia.</b>																					
Big Stone Gap.	Wise.	1,540	18	52.7	- 2.0	76	9	25	13	43	2.22	- 0.05	1.15	0.0	5	23	2	6	w.	John W. Fox, sr.	
Blacksburg.	Montgomery.	2,170	18	48.2	- 4.2	76	8	17	29	48	2.24	- 0.44	1.70	0.0	4	17	7	7	w.	Agrie. Experiment Sta.	
Burksgarden.	Tazewell.	3,250	14	46.0	- 3.7	70	9	14	29	37	2.60	- 0.57	1.65	T.	3	15	6	10	w.	C. H. Greener.	
Elk Knob.	Lee.	3,243	6	54.7	- 1.7	76	9	27	13	34	2.06	- 0.59	1.25	T.	7	19	7	5	sw.	Henry Nicoll.	
Galax.	Grayson.	2,300		50.2		76	18	20	29	45	3.17		2.82	0.0	3	21	7	3	nw.	E. C. Williams.	
Ivanhoe.	Wythe.	2,028	5	48.9		70	9	25	29	36	2.18		1.36	0.0	7	20	6	5	w.	Miss Alice G. Jewett.	
Marion.	Smyth.	2,224	14	49.8	- 3.0	76	9	20	29	46	2.01	- 0.55	1.23	0.0	4	23	7	1	w.	S. Wn. State Hospital.	
Max Meadows.	Wythe.	2,028	13	50.3	- 3.2	74	9	26	13	39	3.13	- 0.01	2.31	0.0	3	14	16	4	w.	James M. Graham.	
Mendota.	Washington.	1,350											0.80	0.0	4	18	4	9	w.	Frank M. Baker.	
Radford.	Montgomery.	1,773											2.22	0.0	5	16	6	9	w.	Arthur Roberts.	
Speers Ferry.	Scott.	1,221											2.42	+ 0.12	1.60	0.0	3	22	4	w.	Mrs. L. E. Venable.
Wytheville.	Wythe.	2,293	16	50.0	- 3.6	74	9	24	29	39	3.06	- 0.18	2.28	0.0	4	16	7	8	w.	U. S. Weather Bureau.	
<b>North Carolina.</b>																					
Andrews.	Cherokee.			55.0		86	3	20	25	50	4.32		2.98	0.0	6	22	8	1	sw.	J. D. Link.	
Asheville.	Buncombe.	2,250	30	52.8	- 2.5	77	18	25	25	42	3.28	+ 0.34	2.04	T.	5	22	5	4	nw.	U. S. Weather Bureau.	
Banners Elk.	Watauga.	3,750	1	47.1		69	4	17	25	40	4.00		2.22	2.0	8	22	4	5	w.	T. L. Lowe.	
Brevard.	Transylvania.	2,239	8	54.2		82	7	18													

TABLE 1.—Climatological data for October, 1909. District No. 3—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.						
<b>Alabama—Cont'd.</b>																				
Riverton.....	Colbert.....	360	12	59.7	- 1.3	91	5	30	24†	45	1.97	- 0.98	1.22	0.0	5	21	3	7	e.	E. R. Nelles.
Scottsboro.....	Jackson.....	652	26	59.0	- 1.4	90	5	25	25	56	3.01	+ 0.73	2.15	0.0	5	22	6	3	e.	Miss Irene Caldwell.
Tuscumbia.....	Colbert.....	488	27	59.4	- 1.6	91	5	32	13†	45	3.33	+ 1.21	2.67	0.0	4	20	1	10	se.	Samuel Moore.
<b>Tennessee.</b>																				
Ashwood.....	Maury.....	725	31	58.8	- 0.9	84	4	26	25	45	2.60	- 0.11	2.15	0.0	2	22	3	6	w.	Mrs. J. W. Fleming.
Benton.....	Polk.....	880	23	58.0	- 1.4	89	4	25	25	44	4.50	+ 1.89	1.73	0.0	4	18	8	5	s.	G. L. Williams.
Byrdstown.....	Pickett.....	1,026	15	57.7	- 0.7	83	3†	25	13	46	1.63	- 0.87	0.57	0.0	8	10	18	3	s.	Dr. Jno. C. Chilton.
Carthage.....	Smith.....	500	27	59.2	- 0.9	87	4	30	25†	37	3.41	+ 1.12	1.83	0.0	5	20	3	8	sw.	E. C. Pickering.
Cedar Hill.....	Robertson.....	625	12	59.2	- 2.0	85	4	30	25†	37	1.85	+ 0.34	1.00	0.0	4	23	6	2	s.	J. F. Ruffin.
Chattanooga.....	Hamilton.....	808	31	59.6	- 1.2	86	4	33	25	33	3.28	+ 0.44	2.51	0.0	5	24	3	4	w.	U. S. Weather Bureau.
Clarksville.....	Montgomery.....	520	43	58.8	- 0.9	87	22	28	13	42	1.47	- 0.87	0.67	0.0	4	25	3	3	sw.	Prof. Jas. A. Lyon.
Decatur.....	Melza.....	850	14	57.1	- 2.7	87	4	23	25	45	3.11	- 0.20	1.20	0.0	6	25	3	3	sw.	J. W. Lillard.
Dickson.....	Dickson.....	800	13	57.4	- 2.9	90	4	23	13	43	1.69	- 0.50	0.77	0.0	4	19	10	2	n.	N. R. Sugg.
Dover.....	Stewart.....	15	15	59.0	- 1.2	90	3†	26	25	51	1.78	- 0.62	0.68	0.0	3	20	7	4	s.	A. M. Tippit.
Dunlap.....	Sequatchee.....	726	20	58.4	- 0.9	91	4	22	25	56	3.45	+ 0.62	1.78	0.0	4	22	3	4	w.	S. B. Boyd.
Elizabethton.....	Carter.....	1,575	20	57.8	+ 0.8	82	8	26	25	53	2.66	+ 0.62	1.26	0.0	5	22	5	4	w.	Lee F. Miller.
Erasmus.....	Cumberland.....	1,850	13	52.6	- 3.4	82	4†	19	25	49	2.12	+ 1.64	0.96	T.	5	25	3	3	se.	Mrs. E. D. Ashley.
Florence.....	Rutherford.....	560	28	57.4	- 2.0	83	4	26	25	35	2.46	+ 0.06	1.44	0.0	3	26	2	3	s.	Erastus P. Bell.
Franklin.....	Williamson.....	655	18	57.9	- 1.6	86	5	28	13†	40	1.59	- 0.87	1.02	0.0	3	22	4	5	sw.	J. L. Parkes, jr.
Harriman.....	Roane.....	841	14	55.7	- 3.0	83	4	25	25	40	2.28	- 0.44	1.20	0.0	4	15	13	1	sw.	Robert R. Ayres.
Hohenwald.....	Lewis.....	983	24	56.8	- 2.8	88	4	23	13	43	3.00	+ 0.67	1.84	0.0	4	19	9	3	sw.	John Lutzelman.
Iron City.....	Lawrence.....	12	12	57.8	- 1.8	91	5	23	13†	44	1.77	- 0.80	1.12	0.0	3	18	0	13	nw.	Capt. H. P. Seavy.
Johnsonville.....	Humphreys.....	364	14	57.7	- 2.8	86	3†	25	13	45	2.73	+ 0.43	1.02	0.0	5	25	2	4	s.	Miss Sallie B. Mathews.
Jonesboro.....	Washington.....	1,740	13	57.2	- 0.9	82	4	30	25	36	1.61	- 1.00	1.00	0.0	5	18	9	4	n.	James H. Epps, jr.
Knoxville.....	Knox.....	977	39	57.2	- 0.9	82	4	30	25	36	1.61	- 1.00	1.00	0.0	5	18	9	4	n.	U. S. Weather Bureau.
Lebanon.....	Wilson.....	522	16	58.2	- 2.0	92	4	24	25	47	2.87	- 0.28	1.93	0.0	3	20	2	9	s.	Logan Fields.
Lewisburg.....	Marshall.....	727	16	58.2	- 2.0	92	4	24	25	47	2.87	- 0.28	1.93	0.0	3	20	2	9	s.	Dr. R. D. Crutcher.
Lynchburg.....	Giles.....	770	21	57.6	- 2.4	85	5	29	13†	37	2.06	- 0.57	1.53	0.0	2	25	6	0	n.	Col. J. H. Burrow.
McMinnville.....	Warren.....	1,011	26	56.8	- 1.5	85	4	25	25	46	2.47	- 0.25	1.87	0.0	4	17	16	4	w.	J. T. Sparkman.
Marion.....	Blount.....	1,050	15	57.4	- 3.5	84	4	25	25	42	2.41	- 0.11	0.98	0.0	5	25	2	4	n.	Mrs. F. E. Benedict.
Mountain City.....	Johnson.....	2,486	13	50.2	- 2.8	76	8†	19	29	49	3.59	+ 0.85	1.34	T.	4	21	8	2	w.	E. E. Barry.
Nashville.....	Davidson.....	454	39	59.9	- 0.4	87	4	30	25	38	1.01	- 1.47	0.60	0.0	4	23	3	5	sw.	U. S. Weather Bureau.
Newport.....	Cocke.....	1,280	19	53.0	- 4.6	78	5	28	25	32	2.70	+ 0.93	1.40	0.0	3	25	3	1	w.	Dr. C. T. Burnett.
Palmetto.....	Bedford.....	770	16	59.6	- 2.4	92	4	27	25	44	3.43	+ 0.72	2.25	0.0	2	23	5	3	w.	Mrs. Ross Woods.
Pinewood.....	Hickman.....	3	13	59.0	- 0.9	91	4	22	25	47	2.43	- 0.28	1.23	0.0	5	21	6	4	s.	Miss Carrie Cash.
Pope.....	Perry.....	13	13	57.3	- 3.3	90	5	21	25	42	2.30	- 0.53	0.70	0.0	4	26	1	4	w.	Miss Bessie Howard.
Rogersville.....	Hawkins.....	1,150	25	55.0	- 1.5	83	9	25	29	47	2.16	- 0.28	1.08	0.0	4	22	4	5	w.	Fred Beal.
Rugby.....	Morgan.....	1,410	22	53.1	- 2.1	83	3	16	25	32	1.18	- 1.20	0.90	T.	3	18	8	5	n.	S. G. Wilson.
Savannah.....	Hardin.....	442	26	57.7	- 2.6	81	19	30	13	34	2.47	- 0.87	1.20	0.0	3	18	8	5	sw.	W. F. Bell.
Sevierville.....	Sevier.....	4	4	55.8	- 1.2	86	4	23	29	49	2.47	- 0.87	1.20	0.0	3	18	8	5	sw.	H. O. Eckel.
Sewanee.....	Franklin.....	2,000	15	57.4	- 1.2	83	5	30	13†	36	2.47	- 0.87	1.98	0.0	2	28	0	3	s.	University of South.
Sparta.....	White.....	920	4	57.1	- 1.8	88	18	24	25	47	1.90	- 0.47	1.50	0.0	3	23	4	4	w.	E. H. Hull.
Springdale.....	Clatsburg.....	1,058	11	51.8	- 4.2	81	2	21	29	55	1.98	- 0.47	1.51	0.0	2	20	7	4	w.	Mrs. Lucy E. Breeding.
Springville.....	Henry.....	377	7	57.3	- 1.3	89	4	22	13	48	1.87	- 0.26	1.09	0.0	6	25	4	2	s.	H. A. Boden.
Tellco Plains.....	Monroe.....	1,075	21	56.7	- 1.3	87	4	24	25	42	3.86	+ 1.08	1.72	0.0	3	23	6	2	s.	R. T. Moore.
Tullahoma.....	Coffee.....	753	23	58.6	- 0.3	89	5	25	42	3.80	+ 1.74	3.15	0.0	4	22	5	4	s.	H. C. Boyd.	
Waynesboro.....	Wayne.....	12	12	58.8	- 1.4	87	4†	29	13†	53	1.39	- 1.54	0.50	T.	4	20	8	3	s.	W. R. Wilson.
Widerville.....	Henderson.....	850	14	59.8	- 2.0	87	5	30	25	31	1.46	- 1.48	1.36	0.0	2	24	6	1	w.	W. P. Watson.
Yukon.....	Lincoln.....	850	14	59.8	- 2.0	87	5	30	25	31	1.46	- 1.48	1.36	0.0	2	24	6	1	w.	W. P. Watson.
<b>Kentucky.</b>																				
Alpha.....	Clinton.....	15	15	57.8	- 1.8	80	9	25	29	43	0.95	- 1.71	0.42	0.0	3	21	2	8	w.	W. W. Hicks.
Anchorage.....	Jefferson.....	700	8	51.7	- 3.9	83	8	26	25†	45	3.87	- 0.42	1.66	0.0	8	16	6	9	sw.	C. E. Barrett.
Bardonia.....	Nelson.....	637	13	56.0	- 3.9	86	3†	25	13	45	2.18	- 0.42	1.57	0.0	8	23	0	8	sw.	G. M. Talbott.
Beattyville.....	Lee.....	650	6	52.7	- 3.7	87	9	19	29	56	1.80	- 0.60	0.60	0.0	8	13	3	15	nw.	G. W. Cann.
Beaverdam.....	Ohio.....	441	6	56.4	- 3.7	92	3	23	13	32	2.08	- 0.23	1.23	0.0	4	20	1	7	sw.	T. S. Woodward.
Berea.....	Madison.....	1,070	8	54.6	- 3.7	83	9	20	28	41	1.22	- 0.45	0.45	0.0	6	20	8	3	sw.	C. F. Rumold.
Bowling Green.....	Warren.....	500	20	58.6	- 0.3	88	3†	25	25	48	1.68	- 0.21	1.03	0.0	7	19	1	11	s.	Mrs. L. G. Causey.
Burnside.....	Pulaski.....	589	19	57.8	- 1.8	89	3†	23	13	45	2.04	- 0.93	0.62	0.0	6	20	4	7	n.	G. M. Estes.
Cadiz.....	Trigg.....	7	7	57.8	- 1.8	89	3†	23	13	45	2.04	- 0.93	0.62	0.0	6	20	4	7	n.	John S. Lawrence.
Calhoun.....	McLean.....	397	6	58.4	- 1.4	91	3	27	13	52	2.20	- 0.96	0.96	0.0	7	19	9	3	n.	W. A. Taylor.
Catlettsburg.....	Boyd.....	544	16	53.8	- 4.1	84	9	24	29	44	1.76	- 0.75	0.48	0.0	7	23	4	4	n.	Chas. N. Bruns.
Earlington.....	Hopkins.....	370	20	57.2	- 2.1	90	3	24	13	48	1.95	- 0.47	1.23	0.0	5	26	1	4	sw.	J. B. Atkinson.
Edmonton.....	Metcalfe.....	600	18	55.7	- 1.4	87	3†	23	13†	45	2.29	+ 0.06	1.75	0.0	3	21	6	4	n.	Miss Lee Ray.
Eubank.....	Pulaski.....	1,177	15	52.3	- 4.8	81	3†	22	25	41	0.99	- 1.15	0.47	0.0	6	20	4	7	sw.	W. H. Henderson.
Falmouth.....	Pendleton.....	530	20	57.8	- 1.8	89	3†	23	13	45	2.04	- 0.93	0.62	0.0	6	20	4	7	n.	J. V. Oldham.
Farmers.....	Rowan.....	668	4	51.6	- 3.7	83	8	18	29	53	2.00	- 0.68	0.68	0.0	8	19	3	9	e.	Miss Gertrude Sorrell.
Frankfort.....	Franklin.....	560	19	53.0	- 2.9	80	3	27	25	37	2.90	+ 0.91	1.31	0.0	8	17	4	10	sw.	Gustave Schaefer.
Franklin.....	Simpson.....	691	16	58.6	- 0.4	92	3	27	13	45	1.68	- 0.19	1.20	0.0	3	14	16	1	nw.	J. E. Newman.
Greensburg.....	Green.....	581	17	55.3	- 1.4	92	7†	20	25†	57	2.30	- 0.63	1.70	0.0	7	20	1	10	n.	L. C. Alcorn.
Highbridge.....	Jessamine.....	762	7	57.8	- 1.8	89														



TABLE 1.—Climatological data for October, 1909. District No. 3—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		
<b>Indiana—Cont'd.</b>																				
Cambridge City.....	Wayne.....	941	10	47.6	- 5.7	83	8†	20	29	48	5.32	+ 3.42	1.50	T.	7	20	2	9	w.	Charles Lemberger.
Columbus.....	Bartholomew.....	632	18	50.5	- 3.7	81	8†	23	29	42	4.99	+ 2.82	1.19	0.0	9	19	4	8	sw.	John A. Perry.
Connersville.....	Fayette.....	769	20	49.2	- 3.7	83	8†	22	29	45	4.38	+ 2.17	1.32	T.	8	20	4	7	nw.	C. C. Hibbs.
Delphi.....	Carroll.....	668	16	47.2	- 4.5	82	8	22	29	48	2.43	- 0.75	0.97	T.	8	9	13	9	.....	R. L. Higginbotham & Son
Eminence.....	Morgan.....	782	.....	49.8	.....	80	8	24	13	40	3.78	.....	2.60	0.0	3	20	5	6	nw.	Dr. E. E. Kelso.
Evansville.....	Vanderburg.....	386	10	56.8	- 1.2	89	3	32	13	31	2.04	- 1.06	0.83	0.0	9	14	12	5	ne.	U. S. Weather Bureau
Farmersburg.....	Sullivan.....	.....	.....	50.6 <sup>a</sup>	.....	81 <sup>a</sup>	8	24 <sup>a</sup>	13	37 <sup>a</sup>	5.33	.....	1.25	0.0	7	.....	.....	.....	.....	Maurice Yeager.
Farmland.....	Randolph.....	1,101	20	49.0	- 3.8	77	9	28	13	31	3.98	+ 2.21	1.15	0.0	7	18	0	13	nw.	W. J. Davison.
Greenfield.....	Hancock.....	905	.....	50.9	.....	83	8	25	13	34	4.65	.....	1.37	0.0	7	1	22	8	w.	W. C. Goble.
Greensburg.....	Decatur.....	954	5	51.8	.....	80	8†	26	13	34	4.81	.....	1.26	0.0	5	19	3	9	w.	Charles H. Ewing.
Heltonville.....	Lawrence.....	.....	.....	51.2 <sup>b</sup>	.....	86 <sup>b</sup>	8	21 <sup>b</sup>	12	47 <sup>b</sup>	5.44	.....	2.12	0.0	8	20	5	6	sw.	E. L. Palmer.
Huntingburg.....	Dubois.....	.....	.....	53.9	.....	85	8	25	13	43	4.86	.....	1.35	0.0	7	.....	.....	.....	.....	H. Dufendach.
Huntington.....	Huntington.....	741	11	48.4	- 5.1	78	9	25	13	34	3.19	+ 0.53	1.25	T.	8	15	7	9	sw.	Charles McGrew.
Indianapolis.....	Marion.....	822	33	50.6	- 4.4	78	8	26	13	30	3.23	+ 0.44	1.18	T.	8	15	6	10	s.	U. S. Weather Bureau.
Jeffersonville.....	Clark.....	455	12	54.8	- 2.6	85	3	27	29	38	4.15	+ 2.21	1.70	0.0	10	18	9	4	w.	John C. Loomis.
Judyville.....	Warren.....	.....	.....	45.7 <sup>d</sup>	.....	83	.....	19	13	41	2.44	.....	0.96	T.	10	14	3	14	a.	John W. Doty.
Kokomo.....	Howard.....	840	11	47.4	- 7.4	79	9	22	29	39	3.26	+ 0.91	1.40	T.	9	18	4	9	sw.	D. R. Warrick.
Lafayette.....	Tippecanoe.....	617	22	48.6	- 4.4	81	8	24	13	38	2.90	+ 0.45	0.95	T.	7	17	5	9	s.	James F. Hood.
Logansport.....	Cass.....	620	17	48.7	- 4.4	84	8†	25	29	45	2.19	- 0.27	0.92	0.0	8	20	3	8	e.	Charles Massena.
Madison.....	Jefferson.....	460	11	53.3	- 4.8	83	8†	27	29	38	3.55	+ 1.49	1.40	0.0	6	18	7	6	e.	J. Cooperider.
Marengo.....	Crawford.....	363	19	52.0	- 4.8	84	3	25	13	42	4.56	+ 1.38	1.19	0.0	8	18	6	7	sw.	J. M. Johnson.
Marion.....	Grant.....	814	14	48.8	- 4.5	83	9	24	29	40	2.94	+ 1.16	1.21	T.	10	17	5	9	sw.	James F. Hood.
Markle.....	Huntington.....	814	10	46.4	- 7.3	80	9	22	29	41	3.05	+ 0.41	1.40	T.	4	14	12	5	sw.	I. S. Shideler.
Mauzy.....	Rush.....	980	21	49.5 <sup>a</sup>	- 1.9	84	9	23	13	43	4.92	+ 2.52	1.31	0.0	10	17	5	9	w.	E. Kirkwood.
Moore Hill.....	Dearborn.....	.....	.....	50.8	.....	80	8†	25	13	35	4.40	.....	1.60	0.0	10	23	6	8	se.	W. S. Bigney.
Mount Vernon.....	Posey.....	410	15	56.2	- 0.4	90	3	27	13	47	4.09	+ 1.55	3.13	0.0	5	24	2	5	n.	C. M. Spencer.
Paoli.....	Orange.....	611	5	51.8	.....	84	3	20	13	46	4.58	.....	1.22	0.0	8	16	8	7	ne.	James A. Gillum.
Princeton.....	Gibson.....	481	19	54.6	- 0.8	87	3	23	13	42	4.68	+ 2.52	1.45	0.0	6	23	3	5	.....	Elisha Jones.
Richmond.....	Wayne.....	972	17	48.3	- 4.9	82	9	22	29	43	5.77	+ 3.37	1.79	T.	8	13	11	7	.....	Walter Vossler.
Rochester.....	Fulton.....	775	.....	47.8	.....	73	9	26	13	26	2.12	.....	1.50	2.0	6	10	14	7	.....	J. P. Keith.
Rockville.....	Parke.....	722	15	56.6	- 4.0	80	8	23	13	32	4.21	+ 1.89	1.57	T.	10	15	6	10	s.	Dr. W. N. Wirt.
Rome.....	Perry.....	370	.....	56.3	.....	88	8	26	13	47	2.54	.....	0.98	0.0	9	14	11	6	w.	Adam Anspach.
Salamonia.....	Jay.....	.....	.....	48.2 <sup>b</sup>	.....	81 <sup>b</sup>	9	23 <sup>b</sup>	29	40 <sup>b</sup>	3.23	.....	1.38	T.	7	13	4	13	sw.	C. V. Skinner.
Salem.....	Washington.....	717	11	51.1	- 5.3	83	3	23	13	43	4.50	+ 1.84	1.25	0.0	8	19	6	6	nw.	E. S. Allen.
Scottsburg.....	Scott.....	570	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	F. H. Park.
Seymour.....	Jackson.....	610	14	52.1	- 3.4	83	8	23	29	44	3.84	+ 1.09	1.05	0.0	8	16	8	7	w.	J. R. Blair.
Shelbyville.....	Shelby.....	.....	.....	59.6	.....	81	3†	25	13	40	5.36	.....	1.64	0.0	12	13	13	5	s.	B. F. Crouch.
Terre Haute.....	Vigo.....	498	11	52.7	- 5.4	82	8	26	13	35	4.38	+ 2.13	1.24	0.0	9	17	3	11	ne.	R. G. Gillum.
Veedsburg.....	Fountain.....	612	.....	51.0 <sup>b</sup>	.....	82 <sup>b</sup>	8†	23 <sup>b</sup>	13	41 <sup>b</sup>	3.32	.....	0.90	T.	11	19	3	9	s.	L. A. Culver.
Vevay.....	Switzerland.....	525	19	52.7	- 4.5	79	8†	27	29	36	4.00	+ 2.05	1.60	T.	6	14	8	9	sw.	Miss Frederica Boerner.
Vincennes.....	Knox.....	431	10	53.0	- 5.0	85	8	23	13	42	4.10	+ 1.61	1.30	T.	7	17	4	10	s.	G. V. List.
Washington.....	Daviess.....	484	7	52.8	.....	85	2	25	13	42	4.03	.....	1.22	0.0	9	24	1	6	se.	H. B. Turrell.
Whitestown.....	Boone.....	.....	.....	48.1	.....	76	5†	22	13	34	3.58	.....	1.14	T.	8	14	7	10	n.	C. A. Stevenson.
Winona Lake.....	Kosciusko.....	.....	.....	49.6	.....	81	8†	26	13	38	2.29	.....	1.34	1.0	6	8	19	4	w.	Rev. A. A. Young.
Worthington.....	Greene.....	526	20	52.3	- 3.0	84	8	24	13	41	4.74	+ 2.15	1.08	T.	8	10	14	6	.....	C. A. Geckler.
<b>Illinois.</b>																				
Albion.....	Edwards.....	531	17	53.9	- 2.7	88	3	23	13	43	2.68	+ 0.55	0.80	0.0	5	23	1	7	s.	B. F. Michels.
Cairo.....	Alexander.....	359	33	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	U. S. Weather Bureau.
Charleston.....	Coles.....	720	18	51.4	- 4.0	81	8	25	13	38	2.80	+ 0.22	1.57	0.0	8	16	6	9	s.	Jacob B. Dazey.
Equality.....	Gallatin.....	421	9	58.8	- 0.7	94	3	27	13	41	1.98	- 0.69	1.20	0.0	4	21	6	4	w.	Dr. L. W. Gordon.
Fairfield.....	Wayne.....	495	18	54.8	- 3.2	89	3	21	13	43	1.86	- 0.24	0.71	0.0	5	17	1	13	nw.	George A. Tromly.
Flora.....	Clay.....	495	23	54.2	- 1.2	90	3	22	13	42	4.50	+ 2.20	1.70	0.0	8	18	6	7	nw.	Jos. S. Peak.
Golconda.....	Pope.....	500	30	56.4	- 3.2	90	3	25	13	44	1.39	- 1.26	1.27	0.0	2	18	10	3	nw.	Dr. D. Lawrence.
Hoopeston.....	Vermillion.....	715	7	48.6	.....	78	8	23	13	31	2.10	.....	0.63	T.	9	17	3	11	.....	S. F. Hoskinson.
McLeansboro.....	Hamilton.....	462	26	55.2	- 1.8	89	3	24	13	37	1.52	- 0.59	0.33	0.0	6	18	6	7	se.	C. C. Judd.
Martinsville.....	Clark.....	630	20	52.5	- 2.9	86	8	21	13	44	3.19	+ 1.37	1.25	T.	5	17	5	9	s.	G. M. Daugherty.
New Burnside.....	Johnson.....	556	14	57.6	- 1.3	87	4	29	14	39	0.83	- 1.75	0.83	0.0	1	16	9	6	s.	George Harris.
Olney.....	Richland.....	486	19	54.7	- 1.6	89	3	24	13	42	3.69	+ 1.51	1.57	0.0	8	15	9	7	se.	Victor E. Phillips.
Palestine.....	Crawford.....	500	26	54.3	- 0.9	84	4†	22	13	39	3.11	+ 0.71	0.80	0.0	5	14	8	9	sw.	Alexander Charley.
Paris.....	Edgar.....	600	12	50.0	- 4.6	80	8	23	13	34	3.25	+ 1.30	1.70	0.0	3	17	10	4	nw.	H. W. Twyman.
Philo.....	Champaign.....	700	24	49.2	- 3.7	81	8	23	13	40	3.21	+ 1.10	0.80	T.	8	15	9	7	nw.	H. A. Burr.
Rantoul.....	do.....	768	18	50.0	- 4.2	83	8	23	13	38	2.40	+ 0.58	0.65	T.	9	17	4	10	se.	Win. Breiner.
Robinson.....	Crawford.....	500	9	54.2	- 2.8	83	7†	24	13	46	3.18	+ 0.56	0.92	0.0	8	21	2	8	sw.	A. P. Woodworth.
Sumner.....	Lawrence.....	459	.....	53.8	.....	86	3	24	13	35	3.18	.....	1.62	0.0	4	20	3	8	nw.	O. A. Fyffe.
Tuscola.....	Douglas.....	644	10	50.6	- 3.8	85	7	22	13	47	3.28	+ 1.16	1.64	T.	6	23	4	4	s.	E. W. Lester.
Urbana.....	Champaign.....	725	7	49.0	.....	80	8	21	13	34	2.25	.....	1.16	T.	8	10	18	3	w.	Prof. J. G. Mosier.

\* Precipitation included in that of the next measurement.

\*\* Temperature extremes are from observed readings of the dry-bulb; means are computed from observed readings.

† Also on other dates.

‡ Data are from standard instruments not supplied by the U. S. Weather Bureau.

§ Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

|| Estimated by observer.

¶ Precipitation for the 24 hours ending on the morning when it is measured

T. Precipitation is less than 0.01 inch rain or melted snow.

a, b, c, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

TABLE 2.—Daily precipitation for October, 1909. District No. 3, Ohio Valley.

Stations.	River basins.	Day of month.																																Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
<i>New York.</i>																																		
Allegany.....	Allegheny.....	.08	.04	.03								1.09	.60	T.	T.	T.	.69	.18				.11	.76	.01	.31				.01		T.		3.91	
Holivar.....	do.....	.12	.12	.02								.65	.23	T.			.63	.02	.05	.02		.12	.72	T.	.32			.04	T.	T.		3.06		
Franklinville.....	do.....	.31	.15									1.65	.07	T.	.04	T.	.20	.09	.21	.05		.67	.46	.05	.34	T.		.05	.18		T.		4.52	
Jamestown.....	do.....																																3.00	
Olean.....	do.....	.22	.08									.08	1.34				.30	.30		.08		.08	.40	.12	.30									
<i>Maryland.</i>																																		
Deer Park.....	Youghiogheny.....																																4.09	
Grantsville.....	do.....											2.00	.15		.02		.03					.49	1.40	T.									4.41	
Oakland.....	do.....											1.52			.11	.10	.12		.34			.36	1.73	.10				.03						
<i>Pennsylvania.</i>																																		
Aleppo.....	Ohio.....											.75	T.				.05	.42				.22		.70	.05								2.19	
Baldwin.....	Allegheny.....											101.50	.05		.04		.02		.13			.21	.04	.30	.16					T.			2.55	
Beaver Dam.....	Ohio.....											.28	.12				T.	.13	T.			.24	.28	.20	.43		.02		T.				1.70	
California.....	Monongahela.....											1.40			T.		T.	.50				.25		.85	T.								3.00	
Clarion.....	Allegheny.....																																2.12	
Claysville.....	Ohio.....											.54	.03		.02		.03	.46				.18	.84	.02									3.06	
Confluence.....	Youghiogheny.....											.46	.90	T.	.08	.14		.04	.06			.26	T.	.76	T.								1.81	
Davis Island Dam.....	Ohio.....											.42	.41	T.	T.	.01	T.	.22	T.			.11	.05	.34	.25								2.73	
Derry Station.....	Allegheny.....											1.54	T.		.03	.02	T.					.21	.93										1.32	
Franklin.....	do.....	T.	T.									.55	T.	T.			T.	.10				.20	.35						.12	T.			2.16	
Freeport.....	do.....											.51	.79	T.			T.	.01	.17			.67	.16	.15	.30								2.72	
Greensboro.....	Monongahela.....											.62	.56			.04	.04	.30	.04			.08	.06	.08	.88	.02							3.14	
Greensburg.....	Youghiogheny.....											1.39	.04	T.	.03		.04	.45				.18	T.	.96	.04	.01								2.11
Greenville.....	Ohio.....	.01										.07	.06	T.			.08	.32				.24	1.19	T.	T.	.06			.07	.01			1.26	
Grove City.....	do.....	.08										.35	.12		.02	T.	.03	.10				.21	.01	.19	.08		.02		.03		.02		2.34	
Herra Island Dam.....	Allegheny.....											.54	.70	T.	T.	T.	T.	.25	T.			.05	.08	.42	.29	.01	T.		T.	T.	T.		2.21	
Indiana.....	do.....											1.30	.30		.04	.03	.04					.14	.23	.06	.04								3.14	
Irwin.....	Monongahela.....											1.59	T.		.02	T.	T.	.45	T.			.10	.90	.08									3.56	
Johnstown.....	Allegheny.....											.49	1.23	.01		.02	.07	.08	T.	.44	.07		.04	.17	.44	.50				T.	T.	T.	2.59	
Lock No. 4.....	Monongahela.....											.60	.50			.02	.02	.40				.10	.10	.35	.52	T.							3.28	
Lyeippus.....	Allegheny.....											1.32	.02		.02	.02	.06	.49				.26	1.03	.06									2.56	
Parkers Landing.....	do.....	.04										.24	1.20	T.			T.	.06	.01	.02		.04	.36	T.	.44	.04							2.36	
Pittsburg.....	Ohio.....											1.24	T.		T.	T.	T.	.29		T.		.12	.02	.69	T.								1.73	
Saunderstown.....	Allegheny.....	.21	.05	.02								.01	.05			.48	.03	.06	.01			.23	.06	.12	.20	.02	.06			.10	.02		3.04	
St. Marys.....	do.....											2.12	.16					.08				.28	.14	.28	.44	T.							2.74	
Saltsburg.....	do.....											.46	.98	T.		T.	.04	T.	.38	.02		.02	.12	.28	.44	T.							0.95	
Skidmore.....	Ohio.....											.35						.15				.20	.25										2.36	
Somerses.....	Youghiogheny.....											.78	.11		.13	.05	.03	.51				.45	.20	.10	T.								2.55	
Springdale.....	Allegheny.....											.49	.72		.02			.22	.02			.07	.17	.25	.37	.02							3.44	
Uniontown.....	Monongahela.....											1.58	.04		.03			.55				.26	.98										2.96	
Warren.....	Allegheny.....	.56										1.54					.28		.06			.32	.20										2.99	
West Newton.....	Youghiogheny.....											.44	.96	T.		.02	.01		.40	.06		T.	.16	.34	.58	.02								
<i>West Virginia.</i>																																		
Arboreale.....	Great Kanawha.....											.72	.03		.10			.08	.38			.04		.98	.55								2.88	
Bancroft.....	do.....											1.07				.30			.12					.70									2.19	
Beckley.....	do.....											.52	.10		.05	.15		.34		.10	.11		.90										2.27	
Ben's Run.....	Ohio.....				.08							1.41	.02		.06	.52							.25	.15									2.49	
Bluefield.....	Great Kanawha.....											.50	1.00		.03	.10		.23	.19			.50	.01	.83									3.39	
Brandonville.....	Monongahela.....											1.35	1.00		.20		.70					.32	1.40	.30									5.27	
Buckhannon.....	do.....											.60	.05		T.			.32	.22			.05	.95	.22									2.41	
Cairo.....	Little Kanawha.....											.52	.02		.02	.04	.07	.34	.08			.33	.75	.16									2.03	
Central Station.....	Middle Island Creek.....											.55			.22			.08	.34			T.	.03	.64	.74	.02							2.05	
Charleston.....	Great Kanawha.....											.45	.21		.02	.10		.03	.43			T.	.03	.64	.74	.02							2.67	
Creston.....	Little Kanawha.....											.63			.05	.01	.03	.47	.03	.10		.30	.50	.10									2.51	
Cuba.....	Sand Creek.....											.20	T.		.70			.60				.30	.50	.10									4.30	
Davis.....	Monongahela.....																																	
Doane.....	Big Sandy.....																																	
Elizabeth.....	Little Kanawha.....											.38	T.					.12																
Elkhorn.....	do.....																																	
Elkins.....	Monongahela.....											1.50	T.		.33	.21	.01	.12				.12		1.79	.14								0.60	
Fairmont.....	Monongahela.....											1.04	.48		.01	.04	.10	.10	.20			.08	.04	.16	.68	T.								



TABLE 2.—Daily precipitation for October, 1909. District No. 3—Continued.

Stations.	River basins.	Day of month.																																Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
<b>Ohio—Cont'd.</b>																																		
Bladenburg.....	Muskingum.....								.25	.20		.25	T.			T.			.50		.05	.15		.95									2.35	
Cadiz.....	Ohio.....										.12	.09			T.	.02	.01		.37			.34		.70	.04					T.	T.		1.69	
California.....	do.....																																	
Cambridge.....	Muskingum.....										.40	.14							.64			.32		.73	.06								2.29	
Camp Dennison.....	Miami.....									1.00	.08	.04	T.	T.				.04	.81	T.	.10		.67	T.									2.85	
Canal Dover.....	Muskingum.....										.67								.29			.20	.60	.16			.17						2.09	
Canton.....	do.....										.07	.41	.07						.09		.03	.08	.02	.90	.06	.01	.01				.02		1.77	
Cardington.....	Scioto.....																																	
Chillicothe.....	do.....																		.60														2.20	
Cincinnati.....	Ohio.....									1.24	.02		.01			T.		.21	.68		.16	.04	.30	.36									3.02	
Circleville.....	Scioto.....									.65	.05	T.						.85		.07			.06	.96	.14								2.78	
Clarington.....	Ohio.....									.50	.05			.02	T.	.10		.52	.06			.17		.75	.07	.02							2.26	
Clarksville.....	Miami.....																																	
Columbus (1).....	Scioto.....									.68	.02	.01				.02		.28	.46		.05	.08	.57	.60									2.77	
Columbus (2).....	do.....									.32	.29	T.						.82		.07	.09												1.59	
Columbus Reservoir.....	do.....									*	.51	.03						.79						.135	.16								3.04	
Coshocton.....	Muskingum.....										.43	.16					.05		.22	.08		.07	.08	T.	.165	T.							2.39	
Dayton (1).....	Miami.....									1.00	.07			T.	T.		*	.22	1.08		.07	.08	T.	.165	T.								4.19	
Dayton (2).....	do.....									*	1.08	.12				*	T.	*	1.30	.01	*	.19	T.	.154	.12								4.36	
Delaware.....	Scioto.....									.53	.12	.12	T.			.06		.52			.06	.12		.12	.02								2.67	
Demos.....	Ohio.....										.23	.02			T.	.03	.04		.53			.39	.87	.08									2.19	
Frankfort.....	Scioto.....										.65								.82			.10		.120										2.77
Garrettsville.....	Mahoning.....	T.									.53	.12			.03		.23		.09	.05		.12		.24	.07		.03		.04				1.55	
Granville.....	Muskingum.....									.05	.82	.05				.10	T.		.62		T.	T.		.135	.01	T.								3.00
Gratiot.....	do.....										.44	T.				.12			.73			.11		.89	.05									2.34
Green.....	Ohio.....									.87									.50			.33	T.	.107										2.77
Greenhill.....	Muskingum.....										.09	.05				T.	T.		.17			.23		.87	.07		.03							1.21
Greenville.....	Miami.....									.85	.14			T.		.02						.12	.40	*	.186									4.21
Hillsboro.....	Scioto.....									.25	.36	T.						T.	.03	.02	.06													2.97
Ironton.....	Ohio.....										.20		.38					.04	.34	.19	.04			.90										2.09
Jacksonburg.....	Miami.....									2.30	.10						1.20	T.				.35		.130										5.25
Kenton.....	Scioto.....									.90	.07	.07		.04				.25						.143	.03									2.79
Killbuck.....	Muskingum.....										.65					T.			.43			.17		.72	.07									1.94
Lancaster.....	Scioto.....									T.	.85	T.						.86				.11	.04		.80	.04								2.68
Lawshe.....	Ohio.....									T.	.48							.67				.18		.81	.08									2.94
McConnelsville.....	Muskingum.....										.39			.01				.39	.01	.18				.70	.05									2.27
Marion.....	Ohio.....									.42	.40	.04						.48				.08		.120										1.94
Marietta.....	Scioto.....										.39							.48				.17	*	.105	T.									2.62
Milfordton.....	Muskingum.....									.76	T.	T.	T.				.05	.03				.37		.77	.07									2.73
Milligan.....	do.....									T.	.37							.13				.50	T.	.50	.14		.05							2.16
Millport.....	Ohio.....										.54	.10						.43				.25	T.	.75										1.82
Nelle.....	Muskingum.....										.40	T.												.73										1.74
New Alexandria.....	Ohio.....										.38	.12		.03				.14				.24		.85	.10									1.86
New Berlin.....	Muskingum.....																																	
New Richmond.....	Ohio.....																																	
New Waterford.....	do.....												.63	T.					.05			*	*		1.05									1.73
North Lewisburg.....	Scioto.....																																	
Orangeville.....	Mahoning.....										.10	.92	.13				.08		.71		.05	.21		1.05										3.25
Pataskala.....	Scioto.....										.32	T.			T.		.05		.64				.37		.83									2.21
Philo (1).....	Muskingum.....										.47	T.					.10	.02		.74		.40		.80	.05									2.58
Philo (2).....	do.....										.45	.21	.13						1.04	T.	.23		1.46											3.52
Plattsburg.....	Miami.....										.48	.03		.03	.03	T.		.06	T.	.17	T.	.105												1.85
Pomeroy.....	Ohio.....										.48	T.			.01			T.	.25	.54		.04	*	.81	.19									2.32
Portsmouth.....	do.....																	.04						.72	.10									1.43
Rittman.....	Muskingum.....										.40	.09	.10					.17				.07		1.15	.05									2.17
Shenandoah.....	do.....										.18	.06	.09	T.	.02	.02	*	.58		.05	.17	*	1.33	.02										3.52
Sidney.....	Miami.....										.47	.08					T.	.09	*	.88	T.	*	.11	.05	.70	.30								2.68
Somerset.....	Muskingum.....										.58	.08	.16	T.		.02	.09		.98		.04	.15		1.91	T.									3.92
Springfield.....	Miami.....										.34	.06				.02		.59				.29		.77		.21								2.28
Summersfield.....	Ohio.....										.55	T.						.56				.12		.90	T.	.21								2.13
Thurman.....	do.....																	.70				.09		1.66										2.97
Urbana.....	Miami.....									.52																								
Warren.....	Mahoning.....	.11									.23			.02	T.	.05		.03						.33	.03									0.80
Waverly.....	Scioto.....									T.	.56	.02				.01		T.	.49	.04	.02	.09		.72	.03									1.98
Waynesville.....	Miami.....				</																													

TABLE 2.—Daily precipitation for October, 1909. District No. 3—Continued.

Stations.	River basins.	Day of month.																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
<i>Alabama—Cont'd.</i>																																	
Madison.....	Tennessee.....									1.30					1.70	1.30					T.				T.								4.30
Riverton.....	do.....									.40					1.22		.29				.02	.04											1.97
Scottsboro.....	Tennessee.....									.74	.02				2.15	.07				.03	T.												3.01
Tuscumbia.....	do.....									.37	.09				2.67	.20																	3.33
<i>Tennessee.</i>																																	
Ashwood.....	Tennessee.....									.45					2.15						T.												2.60
Benton.....	do.....									1.35					1.73	.35					T.				.07								4.50
Bird's Bridge	do.....									1.35	.04				.45	.59										.28							2.71
Bluff City	do.....									1.10	T.				T.	.88																	2.14
Byrdstown.....	Cumberland.....									.55	.02				.57	.10		.01	T.		.02	T.			.33	.03	.16						1.63
Carthage	do.....									1.83					.50	.22					T.		.74		.12								3.16
Center Point.....	Tennessee.....									.34					.65		.35					.40	.25										1.99
Cedar Hill.....	Cumberland.....									1.00				T.	.45							.35	.05		T.								1.85
Collins	do.....									1.13					.30	.16								T.									1.59
Charleston	Tennessee.....									.90					1.50	1.30						T.	.03		T.								3.73
Chattanooga.....	do.....									.66				T.	2.51			T.				.03	.07		.01								3.28
Clarksville.....	Cumberland.....									.67					.30	.20						.30											1.47
Clinton	Tennessee.....									.95					.60	.65		T.					.10			.09							2.39
Dandridge	do.....									1.30					.64	.56							.12										2.62
Decatur.....	do.....									.25	1.04				1.20	.59							.02										



TABLE 2.—Daily precipitation for October, 1909. District No. 3—Continued.

Stations.	River basins.	Day of month.																																Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
<i>Kentucky—Cont'd.</i>																																		
Shelbyville	Salt										1.35	.09		T.	.17		.36	.74	.03		.17			.40	.06								3.37	
Taylorville	do.			T.							1.42		.06			.09		.55	T.		.07	.09			.21								2.49	
Williamaburg	Cumberland										.80				.14	.45									.37								1.76	
Williamstown	Licking										.90	.05						.22	.60		.07			.61	.07								2.52	
<i>Indiana.</i>																																		
Anderson	West Fork, White										.94	.04	.11	.03	.10			.26	.70		.21	.17	T.	1.25	T.								3.81	
Bloomington	do.										.80	.05	.08		.09			.01	1.20	.25		1.65		.91	.07								5.11	
Bluffton	Wabash																																	
Butler	Muscatatuck										2.03				.09			.22	1.41		.51	.45		.76									5.47	
Cambridge City	Whitewater										T.	1.33	.18		.04				1.50			.72		1.48	.07								5.32	
Columbus	East Fork, White										.55	.65	.07		.04			1.14	.20		1.19		1.00	.15									4.99	
Connersville	Whitewater										.58	.10	.04	T.	T.			.16	1.14		.67	.37	T.	1.32									4.38	
Delphi	Wabash										.28	.02	.17	T.	.19			.46				.20		.97	.14								2.43	
Eminence	West Fork, White										.54	T.									.64		T.	2.60									3.78	
Evansville	Ohio										.49	.06		T.	.30			.05	.25		.81	.02	.03	.03									2.04	
Farmersburg	Wabash			T.							.30							.48	1.25		.40		T.	1.25		1.25		.40					5.33	
Farmland	West Fork, White										1.14		.21		.14			.79			.43		1.15	.12									3.98	
Greenfield	East Fork, White										.78	.19						.20	1.17		.40	.66	T.	1.25									4.65	
Greensburg	do.										1.16	T.	T.					T.	1.26		.87	.39		1.13									4.81	
Heltonville	do.										.67	.06	.06					.50	.50			2.12	.73	.50									5.44	
Huntingburg	Patoka										.73				.14			1.35	.82		1.31	.20		.31									4.86	
Huntington	Wabash										.80	.35	T.		.08	T.		.08			.10	.50	.03	1.25	T.								3.19	
Innapolis	West Fork, White										.58	.05	T.	.01				1.03	.15		.52		.66	.23									3.23	
Jeffersonville	Ohio			T.							1.70	.02	.03	T.	.03			1.11	.30		.63	.01		.30	.02								4.15	
Judyville	Wabash										.10	.07	.01	.10	.20			.15	.48		.35	.02	T.	.96									2.44	
Kokomo	do.										.68	.18	T.	.10	.08			.13	.32		.05	.32	T.	1.40									3.26	
Lafayette	do.										.31	T.	.35	T.	.33			.41				.33	T.	.95	.22								2.90	
Logansport	do.										.29	.06	.23		.22			.17				.17		.92	.13								2.19	
Madison	Ohio										1.40							.25	.75		.17	.25		.73									3.55	
Marengo	Big Blue			T.							1.12	T.		T.	.10			1.19	.61			.73	*	.81									4.56	
Marion	Mississinewa										.65	.10	.18	.07	.04			.06	.21		.08	.34		1.21									2.94	
Markle	Wabash										.80	.15	T.					.70			T.	.70		1.40									3.05	
Mauzy	East Fork, White										1.31	.16	.05	T.				14.12			.46	.41	.02	1.25									4.92	
Moore Hill	Ohio										1.60	.01	.08		.03			.03	1.06		.13	.20		1.22	.04								4.40	
Mt. Vernon	do.										.22			T.		.18		.14	T.		*	3.13		T.									4.09	
Pach	East Fork, White										.60	.02	.04					.98	1.25		.45	.45		.66									4.58	
Princeton	Patoka										.50				.15			.98	1.25		1.45	.45		.35									4.68	
Richmond	Whitewater										1.79	.11	T.	.01				1.10	.34		.76	T.	1.35	.31									5.77	
Rochester	Tippecanoe										.37	.15	.04					.01			.05	T.	T.	1.50									2.12	
Rockville	Wabash										.29	.15	T.	.06	.02			.28	1.05		.63	.08	.08	1.57									4.21	
Rome	Ohio			T.							.98		.05		.23			.13	.01		.70	.27		.16	.01								2.54	
Salamonia	Salamonia										.98	.05	.08		.07	T.		.44			T.	.23		1.38									3.23	
Salem	Big Blue										1.14	.02	.06	T.	T.			1.25	.74		.49	.32		.48									4.50	
Scottsburg	Muscatatuck										.80	T.	.04		T.			.30	1.08		.80	.11		.68	.03								3.84	
Seymour	East Fork, White			T.							1.01	.07	.03	.01	.02			.07	1.32	.02	.72	.43	.02	1.64	T.								5.36	
Shelbyville	do.										.60	T.	.04	.02				.18	1.24		.78	.38	T.	1.00	.14								4.38	
Torre Haute	Wabash										.35	.17	.11	.04	.10			.42	.90		.35		.17	.68	.03								3.32	
Veedersburg	do.										1.60	.10			T.	T.		.90		.40	.30		.70										4.00	
Vevay	Ohio										.30	T.	T.		T.	T.		.70	1.30	.30	.10	.90		.50	T.								4.10	
Vincennes	Wabash										.45	.03						.47	1.17	.18	.05	1.22		.43	.03								4.03	
Washington	West Fork, White										.70	T.	T.	.14	.09			.28	.86		.16	.37	T.	.98									3.58	
Whitestown	do.										.48	.20	.02			T.		.05			T.	.13		1.34	.07								2.29	
Winona Lake	Tippecanoe										.34	.03	T.	.04	T.			.45			.90	1.00	.90	1.08									4.74	
Worthington	West Fork, White			T.																														
<i>Illinois.</i>																																		
Albion	Wabash										T.			T.	.22			.80	.72		.61			.33									2.68	
Charleston	do.										.49		.04		.01			1.40	.17		.18		.45	.06									2.80	
Equality	Ohio										.45	T.			.06				.27		1.20			T.									1.98	
Fairfield	Wabash																	.63	.71		.32	.13		.07									1.86	
Flora	do.										.67	T.	.05		.06	T.		1.70	.76		.48	.31		.47									4.50	
Golconda	Ohio														.12			T.		1.27													1.39	
Hoopeston	Wabash										.05	.19	T.	.18				.31	.37		.28	.04	.05	.63										

TABLE 3.—Maximum and minimum temperatures at selected stations, October, 1909. District No. 3, Ohio Valley.

Date.	Pennsylvania.										West Virginia.										Ohio.							
	Greenville.		Pittsburg.		Charleston.		Elkhorn.		Elkins.		Glennville.		Huntington.		Morgantown.		Parkersburg.		Wheeling.		Canton.		Cincinnati.		Columbus.		Dayton.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	53	46	56	48	71	45	67	36	62	40	68	40	69	41	64	45	65	46	63	43	56	41	70	44	65	42	70	36
2...	56	37	60	42	70	47	71	39	61	33	69	35	71	40	67	48	66	38	64	35	60	36	73	45	68	43	73	37
3...	60	35	59	40	71	43	69	37	66	34	74	35	73	40	66	36	70	38	67	35	63	35	79	50	69	48	77	45
4...	60	47	63	42	71	42	72	40	67	39	74	37	73	44	69	37	66	45	65	38	59	40	72	49	65	43	72	40
5...	72	35	70	47	73	42	69	48	72	38	78	36	74	39	73	49	72	41	70	40	63	40	70	46	69	41	72	38
6...	75	33	73	44	74	48	69	46	73	42	76	43	76	42	71	44	73	45	70	43	69	41	77	48	73	44	79	38
7...	78	34	75	43	74	46	72	43	73	39	77	41	76	43	76	39	78	43	73	40	71	37	78	48	77	48	82	40
8...	81	31	78	44	77	48	76	49	77	37	83	40	78	43	80	39	73	44	71	40	74	39	81	50	78	49	82	40
9...	83	38	79	48	78	50	74	48	81	37	85	38	82	41	80	51	81	45	76	41	78	42	81	51	79	52	82	42
10...	79	43	80	56	78	53	75	50	78	41	83	40	84	43	83	56	81	50	80	41	77	48	89	51	74	56	75	58
11...	69	49	67	48	74	53	69	48	63	46	71	51	67	50	73	49	66	50	59	43	64	48	55	42	58	44	60	44
12...	51	36	51	35	67	41	59	39	50	35	55	41	51	39	51	42	51	38	49	42	48	32	44	36	44	32	44	33
13...	44	29	42	31	55	32	50	37	43	32	51	25	54	28	44	31	50	32	48	31	43	31	54	30	48	29	51	28
14...	53	26	52	41	66	40	53	39	59	33	58	31	62	31	53	37	57	45	56	35	54	37	56	43	56	38	55	42
15...	52	31	47	38	63	42	55	38	46	36	55	36	53	39	51	37	51	42	41	30	48	31	51	39	47	38	45	36
16...	50	32	45	38	55	45	53	40	46	34	55	40	60	40	47	34	53	35	50	35	47	35	56	40	51	37	53	35
17...	54	39	52	36	57	42	69	31	53	29	58	34	55	30	53	32	54	28	57	26	53	32	50	36	55	33	54	27
18...	45	32	47	40	60	48	67	33	56	40	57	42	57	43	51	41	49	43	47	26	46	40	51	43	46	39	46	40
19...	53	24	48	32	59	48	72	37	53	33	58	34	57	39	50	30	54	35	56	31	50	28	54	38	52	33	56	28
20...	58	20	61	34	73	36	65	40	69	26	71	38	66	33	67	33	66	34	65	30	59	30	59	41	59	37	57	32
21...	63	39	65	55	70	45	73	45	67	45	69	46	71	37	67	51	69	55	67	30	64	53	74	59	69	54	72	51
22...	61	44	60	46	77	54	71	47	67	42	73	50	76	49	66	53	69	52	66	51	57	44	72	46	60	44	65	46
23...	46	39	46	37	70	50	68	40	56	38	62	41	63	48	62	44	62	39	47	44	48	37	53	39	45	36	53	37
24...	39	35	39	36	55	37	58	34	38	33	54	38	42	37	46	37	42	38	45	39	40	36	43	34	41	33	43	33
25...	50	28	50	35	60	34	68	27	54	26	55	32	57	27	52	32	54	28	53	30	48	31	58	29	52	30	54	27
26...	64	38	63	45	64	34	60	30	62	28	66	27	64	29	61	39	64	34	66	33	61	34	66	42	63	38	65	42
27...	51	39	54	42	63	39	60	33	57	34	62	32	61	35	58	50	56	40	58	35	52	44	56	45	51	40	56	41
28...	42	32	42	34	57	37	55	27	41	27	54	30	49	34	50	35	44	32	44	35	44	31	47	36	44	31	47	30
29...	47	32	47	32	51	26	57	23	45	22	51	20	50	23	48	27	50	23	53	25	45	25	52	31	47	29	52	24
30...	59	27	61	36	70	36	63	28	65	24	69	30	71	24	63	30	67	37	64	25	60	37	73	38	68	41	70	34
31...	72	26	70	44	74	39	.....	.....	71	30	75	29	75	34	.....	.....	74	39	75	31	70	36	77	49	73	47	74	39
Mns	58.7	34.7	58.2	40.9	67.0	42.6	65.3*	38.4*	60.5	34.6	66.0	36.5	65.1	37.6	61.4*	40.9*	61.8	39.8	60.2	35.5	57.1	37.1	62.9	42.5	59.5	40.3	62.5	37.5

Date.	Ohio.				Virginia.				Tennessee.				Kentucky.			
	Marion.		Waverly.		Big Stone Gap.		Wytheville.		Asheville, N. C.		Decatur, Ala.		Chattanooga.		Jonesboro.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	65	37	73	34	74	41	65	40	68	45	78	44	74	52	73	48
2...	70	33	77	34	69	38	65	39	68	41	79	42	76	50	74	45
3...	74	39	78	38	74	43	68	40	73	43	83	42	83	52	79	48
4...	69	36	75	40	75	48	70	47	75	45	88	50	86	59	82	59
5...	72	38	78	35	73	44	58	53	67	50	89	53	86	62	78	56
6...	77	39	80	40	74	47	63	46	68	54	83	53	78	57	76	54
7...	82	39	83	41	73	47	72	44	71	49	82	52	76	56	74	55
8...	80	40	84	37	74	43	73	39	73	42	83	53	79	54	76	51
9...	85	40	83	38	76	41	74	37	73	41	81	55	77	52	79	48
10...	75	53	81	43	75	44	71	45	69	45	65	51	73	55	76	53
11...	59	43	66	43	69	49	60	45	64	47	66	43	67	50	67	49
12...	47	32	56	37	56	40	50	33	52	38	57	40	55	43	54	38
13...	48	28	55	25	52	25	46	31	50	33	60	30	60	34	54	33
14...	52	38	64	43	53	38	54	45	65	36	73	31	64	46	62	41
15...	46	33	54	31	54	44	47	44	56	43	65	46	64	47	61	46
16...	52	36	60	38	59	36	54	41	58	38	69	38	69	41	65	40
17...	54	38	63	25	63	33	60	36	71	34	79	39	79	47	74	44
18...	48	42	51	40	75	36	70	38	77	39	81	47	81	50	78	44
19...	58	23	59	28	70	51	55	45	74	43	77	47	76	54	74	54
20...	67	27	58	31	66	45	55	44	57	46	69	53	63	56	68	53
21...	71	50	72	50	65	43	64	44	71	49	78	53	78	54	73	56
22...	62	43	77	40	75	47	71	50	73	45	80	63	81	53	78	57
23...	49	33	64	39	68	45	70	38	75	37	71	54	70	44	72	41
24...	41	32	48	35	47	36	38	34	39	33	53	40	50	38	44	35
25...	52	27	59	23	61	27	58	28	64	25	63	30	62	33	60	30
26...	65	37	69	24	62	27	59	29	64	30	70	32	67	38	65	34
27...	56	38	62	39	62	32	60	37	65	33	77	38	70	42	68	40
28...	45	26	53	29	57	28	51	31	55	35	72	36	65	41	60	37
29...	54	21	56	20	66	27	54	24	60	29	68	32	65	37	61	34
30...	70	37	74	32	73	30	70	34	72	30	75	34	70	37	69	35
31...	72	41	78	31	72	30	70	34	74	36	77	34	74	44	73	37
Mns	62.0	35.9	67.1	34.9	66.5	38.9	61.1	38.8	65.8	39.8	73.9	43.7	71.5	47.7	69.3	45.0



TABLE 3.—Maximum and minimum temperature at selected stations, October, 1909. District No. 3—Continued.

Date.	Kentucky.														Indiana.														Philo, Ill.	
	Bowling Green. ff		Earlington. ff		Greensburg. ff		Lexington. ff		Louisville. ff		Maysville. ff		Williamsburg. ff		Butterville.		Evansville.		Indianapolis.		Kokomo.		Rockville.		Worthington.					
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.		
1...	82	42	89	40	76	35	68	45	73	48	74	39	.....	.....	74	35	73	48	70	40	67	34	70	40	75	37	72	35		
2...	84	40	83	39	80	34	73	48	79	47	77	39	.....	.....	77	39	78	47	74	45	72	36	75	45	80	40	77	39		
3...	88	45	90	42	88	35	79	52	83	53	82	40	.....	.....	79	45	89	58	75	53	78	48	73	56	83	50	76	52		
4...	88	50	89	54	81	42	73	51	78	55	77	46	.....	.....	78	48	82	60	72	47	69	40	73	49	78	50	73	40		
5...	85	52	80	53	78	44	70	47	74	49	75	38	.....	.....	78	42	76	55	67	44	67	37	69	46	75	46	70	44		
6...	85	43	84	40	80	35	74	46	79	49	80	41	.....	.....	80	42	78	49	75	46	72	36	75	43	80	42	73	40		
7...	86	44	87	41	82	35	78	56	82	50	83	41	.....	.....	84	44	80	51	77	51	77	38	78	47	83	42	79	39		
8...	87	52	87	42	82	41	78	56	83	55	86	42	.....	.....	83	56	81	57	78	55	78	40	80	53	84	48	81	48		
9...	83	49	79	52	82	42	79	55	80	56	85	42	.....	.....	82	57	77	60	76	57	79	45	76	55	81	54	76	53		
10...	66	49	68	59	67	42	68	46	65	50	77	53	.....	.....	73	56	69	55	65	47	62	52	68	49	71	55	63	48		
11...	68	44	64	43	66	32	58	39	58	42	64	43	.....	.....	60	45	56	42	51	37	53	38	50	39	55	44	50	39		
12...	53	33	51	33	52	31	43	31	46	35	49	33	.....	.....	48	31	45	34	38	32	41	30	41	30	48	31	39	29		
13...	63	26	64	24	61	21	52	27	57	31	56	26	.....	.....	52	27	59	32	48	26	48	25	49	23	52	24	47	23		
14...	67	43	66	38	67	22	58	41	59	42	62	27	.....	.....	53	41	51	44	49	34	48	28	49	29	52	36	50	25		
15...	63	39	62	37	61	34	53	37	58	40	53	34	.....	.....	54	34	60	40	48	36	43	31	52	32	60	31	58	28		
16...	75	38	70	36	66	29	58	38	63	42	60	33	66	.....	59	34	65	44	53	34	51	32	54	32	63	31	55	29		
17...	83	43	82	43	69	31	51	42	57	44	50	30	73	36	49	35	66	47	50	35	55	25	50	36	53	35	47	31		
18...	83	51	76	51	91	42	62	43	56	44	54	37	81	44	48	43	56	46	48	41	48	40	47	42	50	44	48	39		
19...	69	47	65	47	60	40	56	39	57	42	60	34	66	47	57	31	58	42	53	34	54	26	55	33	57	34	55	32		
20...	75	50	65	48	73	44	64	40	63	45	62	32	72	43	56	41	64	49	59	41	56	31	58	42	59	43	58	39		
21...	80	57	79	53	75	48	71	57	75	60	73	34	74	57	73	55	73	60	69	54	67	52	69	51	72	56	68	49		
22...	85	53	83	49	81	44	75	51	78	49	77	45	82	50	74	47	78	51	64	45	58	43	63	42	76	40	61	35		
23...	61	55	52	51	62	45	60	36	56	38	59	45	70	44	64	37	56	42	48	35	48	34	50	40	64	40	47	36		
24...	58	38	53	40	48	36	40	33	46	36	45	36	47	37	48	35	52	39	43	34	44	29	47	33	50	37	50	34		
25...	66	25	65	30	66	20	58	29	60	32	63	24	68	23	58	30	60	35	54	31	57	28	57	32	58	31	60	31		
26...	71	32	72	40	70	22	64	37	67	42	68	25	71	27	66	42	68	44	64	43	64	36	66	40	58	38	66	34		
27...	67	46	63	45	62	26	54	42	58	46	60	36	66	33	61	36	57	45	53	41	53	36	55	37	67	41	55	34		
28...	69	31	61	30	59	25	48	33	52	38	52	31	61	26	50	31	54	40	46	32	46	25	47	28	56	33	45	26		
29...	69	28	69	28	63	20	53	30	58	32	47	23	63	22	58	27	63	35	52	33	52	22	57	30	50	27	58	28		
30...	78	30	77	32	77	20	71	39	73	38	77	24	77	28	71	39	72	44	69	39	69	31	70	41	59	29	70	34		
31...	80	40	79	39	79	26	74	48	77	56	79	29	77	30	76	49	75	54	74	49	74	43	74	47	70	37	75	46		
Mns	74.7	42.4	72.4	41.9	77.0	33.6	63.3	42.4	66.1	44.7	66.6	35.5	.....	.....	65.3	40.5	66.8	46.7	60.1	41.0	59.7	35.2	61.2	40.1	65.1	39.5	61.4	37.0		

**Climatological Data for October, 1909.**  
**DISTRICT No. 4, LAKE REGION.**

Prof. HENRY J. COX, District Editor.

**TEMPERATURE.**

The month, as a whole, in Climatological District No. 4 was considerably cooler and drier than usual. Over the eastern portions of the district there was a marked deficiency in sunshine during the latter half of the month, and an increased number of rainy days, although the amount of rainfall was small. Nearly normal conditions, in respect to sunshine and number of days with precipitation, prevailed over the western sections.

The deficiency in temperature was greatest in those sections south of the forty-third parallel, where it amounted to nearly 5°, and extreme departures occurred as follows: Coldwater, Mich., -6.4°; Plymouth, Mich., -7.1°; South Bend, Ind., -6.4°; Cleveland (2), Ohio, -6.1°; Ottawa, Ohio, -6.5°; Elba, N. Y., -6.4°; and Westfield, N. Y., -6.6°. Going northward from the forty-third parallel, temperature more nearly approached the normal, the deficiency becoming only about 1° in the Upper Peninsula of Michigan.

The weather was mild during the first decade of the month, as a warm area passed across the district, culminating on the 6-9th, when the highest temperatures of October, 1909, were recorded. During this time temperatures of over 80° occurred in practically all portions of the district, the absolute maximum being 87° at Gladwin, Mich., on the 9th.

This period of warm weather was followed by a sharp cool wave which appeared in the western sections on the 11th and rapidly overspread the entire district. Killing frosts were general in the western Lake region on the morning of the 12th, and by the 20th had occurred at nearly all stations to the eastward. The cool period extended to near the end of the month, the lowest temperatures occurring generally on the 28th to 30th. Readings of 8° were made at Floodwood and Stevens Mine, Minn., on the 28th, and of 10° at Nehasane and Old Forge, in the highlands of New York, on the 30th; while temperatures of from 20° to 25° occurred at many stations in the southern portions of the district not immediately on the lake shores.

**PRECIPITATION.**

With the exception of localities in the region of western Lake Superior, northern Indiana, and western Ohio, where the amount of precipitation for the month was slightly in excess of the normal, a deficiency of between 1 and 2 inches prevailed generally over the district. The amounts of precipitation in the individual storms were uniformly light. The greatest 24-hour fall of the month was but 1.80 inches at Ironwood, Mich., on the 21st, and as a rule the greatest falls in any twenty-four hours were considerably less than 1 inch.

There was practically no precipitation over that portion of the district west of New York State during the first ten days, but rain and snow set in with the sharp drop in temperature at the close of this period, and precipitation was frequent over the central and eastern sections during the remainder of the month. Over the extreme western sections there were two distinct periods of precipitation, from the 10th to 15th and from the 20th to 23d, respectively.

Snow was general from the 11th to 13th, being very heavy in northern Wisconsin, the Upper Peninsula of Michigan, and Minnesota, where depths of from 10 to 22 inches were reported. At Buffalo, N. Y., 6 inches of snow fell on the morning of the 13th, but elsewhere throughout the district the snowfall was light, being generally less than 1 inch.

As a consequence of the light precipitation during the past season, the rivers of Michigan, Ohio, and Minnesota were reported as somewhat lower than usual.

**TORNADO AT ERIE, PA.**

With one exception, no damaging storms occurred during the month. A tornadic disturbance of moderate energy, how-

ever, passed about 25 miles south of Erie, Pa., on October 21, causing a property loss of approximately \$150,000, and seriously injuring eight persons. The description following of this tornado was furnished by Mr. George R. Oberholzer, Local Forecaster, in charge of the local office of the Weather Bureau at Erie, Pa.:

The parent disturbance was a low pressure area (barometer 29.60 inches) whose center moved from the Lake Superior region to a point north of Georgian Bay during the day. With the pressure over Kentucky and Virginia greater than 30.10 inches, comparatively steep gradients resulted over Ohio, Pennsylvania, and the Lake region, and caused brisk to high westerly winds. Showers were general in the Lake States during the 21st, and a series of thunderstorms moved from eastern Ohio northeastward over Pennsylvania and western New York State during the afternoon.

At Erie a thunderstorm was observed moving eastward over the lake north of the station at 3:30 p. m., attended by a considerable electric display. A heavier storm moving in the same direction, but more to the southward, soon followed. The thundercloud appeared unusually threatening, due to its boiling and rolling, and the outrushing squall wind gave a velocity of 30 miles an hour from the south at 4:05 p. m., as recorded at the Erie station. Hailstones, varying in diameter from two-tenths to six-tenths of an inch, fell from 4:25 to 4:39 p. m., and 0.18 inch of rain was recorded from 4:08 to 4:45 p. m. The storm was preceded for five hours by a temperature of 64°, and it fell only 6° during its passage. The temperature then rose to 60° at 5 p. m., after which it fell slowly until midnight, when another squall caused a drop from 56° to 50°. The barometer during the earlier storm showed only a moderate thunderstorm effect, and afterward rose slightly during the remainder of the night. The wind blew uniformly from the south and southwest during the day with an hourly movement of from 13 to 24 miles.

Warm, humid conditions similar to those at Erie obtained during the day in the region traversed by the tornado. The winds were moderate south to southwest and the sky was generally cloudy. After 5 p. m. the clouds became heavier, and appeared very threatening because of their broken structure, having heavy masses moving in various directions. About four miles southwest of Cambridge Springs, at 5:30 p. m., a distinct funnel cloud developed, and seemed suspended from the cloud strata far above the earth. As it moved eastward it increased in size and its point gradually approached the surface, which it apparently first touched within a mile of Cambridge Springs, as was indicated afterward by broken trees and scattered corn shocks. From this point its path of destruction, 200 feet wide, swerving to right and left of a straight line as its vortex swayed from side to side, led east-northeastward across the north side of the borough of Cambridge Springs to Millers station, and thence to Shreve Ridge, about 5 miles southwest of Union City. After passing this point it disappeared, apparently much as it had formed, the total time from formation to disappearance being about an hour. Its track was about 20 miles long, and although it had an average width of 200 feet, the greatest damage was done over a path of approximately 125 feet wide.

The damage was most severe on the southern side of the course, and most of the debris was scattered to the left. At Cambridge Springs, twenty minutes before the appearance of the tornado, a thickly insulated electric light cord was found so heavily charged with static electricity as to be hot to the touch, as were also the switch buttons connected thereto. There was no rain during the day until ten minutes before the tornado struck, when there was a light shower followed by hailstones of moderate size. No precipitation attended the tornado itself, although moderately heavy rain followed ten minutes thereafter, accompanied by thunder, which continued for almost an hour, when the sky cleared. It soon clouded again, however, and remained cloudy during the night.

As is usual with these storms, curious and interesting incidents abounded all along its course, some of which are given below from descriptions in the Cambridge Springs Enterprise:

"Something of its tremendous force can be judged from the fact that it ripped some of the heavy steel framework from the north end of the Grand street bridge, and carried one of the steel beams, weighing hundreds of pounds, fully 125 feet away.

"At the home of Mr. F. W. Hyatt, the force of the wind blew a curtain between the glass and sash of the window, and it can not be moved either way.

"Window frames have been found a mile away with not a pane of glass broken.

"One remarkable feature of the storm was that while it completely demolished the Hanson residence, it took only a few panes of glass out of the laundry building standing within 20 feet of it.

"The funnel had the appearance of an inverted cone, swaying in the top. The end toward the earth was small, ranging from a foot to 3 or 4 feet in diameter. Practically all who saw the storm agreed that it carried boards, planks, and other missiles from 400 to 500 feet high."



TABLE 1.—Climatological data for October, 1909. District No. 4, Lake Region.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	
<b>Minnesota.</b>																			
Duluth.....	St. Louis	1,133	38	42.4	- 2.8	71	8	18	28	28	2.15	- 0.59	1.56	2.0	9	7	9	15	U. S. Weather Bureau.
Floodwood.....	do.	1,257	5	44.4	- 1.8	82	7	8	28	44	1.27	- 0.59	1.07	2.0	2	8	7	16	M. H. Schussler.
Mount Iron.....	do.	1,510	15	42.0	- 0.1	80	6	10	28	38	2.35	- 0.59	1.20	13.2	8	0	23	8	Oliver Iron Mining Co.
Stephens Mine.....	do.	40.8	2	40.8	- 1.2	80	6	8	28	44	2.33	- 0.59	1.08	7.0	8	8	10	13	Do.
Two Harbors.....	Lake	692	15	44.1	- 1.0	73	6	11	28	33	3.33	+ 0.10	1.75	T.	3	10	13	8	Geo. W. Watts.
<b>Wisconsin.</b>																			
Appleton.....	Outagamie	795	10	46.2	- 2.9	80	8	22	28	40	0.84	- 1.06	0.35	2.8	4	13	0	18	J. L. Mead.
Ashland.....	Ashland	647	15	45.7	- 1.8	85	7	21	28	38	1.83	- 1.39	0.65	3.0	7	9	8	14	Sam Wheeler.
Cecil.....	Shawano	804	2	44.2	- 2.7	78	7	10	21	43	0.32	- 1.06	0.18	1.0	3	9	20	2	L. W. Schmidt.
Chilton.....	Calumet	860	15	45.7	- 3.6	81	8	24	19	42	0.90	- 1.51	0.44	1.0	4	17	11	3	D. V. Jones.
Crandon.....	Forest	1,060	12	44.2	- 1.1	73	7	20	19	36	0.76	- 1.89	0.20	3.0	6	18	6	7	A. L. Emde.
Florence.....	Florence	1,293	17	42.1	- 1.2	74	6	20	27	38	0.95	- 1.91	0.50	T.	3	12	1	18	F. S. Evans.
Fond du Lac.....	Fond du Lac	800	23	45.7	- 2.8	83	8	16	28	44	0.76	- 1.40	0.28	1.0	6	13	9	9	Geo. W. Marshall.
Grand River Locks.....	Marquette	616	1	44.9	- 1.3	80	8	11	19	40	0.99	- 2.31	0.50	1.5	4	19	2	10	Jerry Parkinson.
Green Bay.....	Brown	617	23	45.6	- 1.3	80	8	26	28	31	0.95	- 1.42	0.38	2.3	6	6	10	15	U. S. Weather Bureau.
Herbster.....	Bayfield	700	1	44.6	- 1.3	80	8	11	27	41	3.95	- 1.40	6.0	6	7	8	16	Wm. Angell.	
Iron River.....	Bayfield	1,096	9	45.6	- 1.3	85	7	18	28	37	4.18	- 1.45	22.0	5	7	0	24	Harry C. Hale.	
Kewaunee.....	Kewaunee	590	9	45.6	- 1.3	85	7	18	28	37	4.18	- 1.45	22.0	5	7	0	24	Eugene V. Kimball.	
Manitowish.....	Manitowish	616	59	45.5	- 2.3	71	30	26	28	30	1.07	- 1.53	0.50	2.5	5	9	13	9	Johanna Lups.
Menasha.....	Winnebago	764	12	45.8	- 2.3	71	30	26	28	30	1.07	- 1.53	0.50	2.5	5	9	13	9	George T. Allanson.
Menominee Falls.....	Waukesha	842	12	45.8	- 2.3	71	30	26	28	30	1.07	- 1.53	0.50	2.5	5	9	13	9	S. H. Christman.
Milwaukee.....	Milwaukee	681	39	47.6	- 2.6	73	7	28	28	26	0.61	- 1.78	0.25	0.2	7	15	9	7	U. S. Weather Bureau.
New London.....	Outagamie	762	13	45.9	- 2.9	81	8	21	28	38	0.60	- 2.02	0.20	2.0	3	11	8	12	A. H. Pape.
Oconto.....	Oconto	590	18	45.4	- 3.1	81	8	23	19	42	1.10	- 1.29	0.37	2.5	6	10	15	6	W. K. Smith.
Oshkosh.....	Winnebago	744	20	45.0	- 4.2	78	8	20	19	34	0.58	- 1.53	0.38	T.	3	16	12	2	Evan Vincent.
Pine River.....	Waushara	900	14	45.0	- 3.9	80	8	18	28	37	0.69	- 1.85	0.29	0.5	4	6	13	9	G. H. Carpenter.
Plum Island.....	Door	588	1	45.9	- 3.9	65	8	30	29	18	1.43	- 0.45	3.2	7	5	12	14	John P. Whelan.	
Port Washington.....	Ozaukee	713	16	48.6	- 0.8	76	31	27	14	29	0.93	- 1.15	0.51	T.	2	10	6	15	R. C. Kann.
Racine.....	Racine	633	12	47.7	- 5.4	74	31	22	28	29	0.67	- 1.03	0.40	T.	5	18	1	12	Daniel Davis.
Sheboygan.....	Sheboygan	831	9	47.2	- 5.4	71	30	27	28	28	1.13	- 0.66	0.5	5	6	14	11	Louis C. Meyer.	
Sturgeon Bay.....	Door	600	11	44.6	- 2.9	70	8	24	19	34	1.11	- 0.43	4.0	5	14	10	7	Adam N. Dier.	
Superior.....	Douglas	671	13	43.0	- 4.3	71	8	17	28	32	2.28	- 1.88	0.0	6	8	9	14	E. B. Banks.	
Waupaca.....	Waupaca	857	13	44.4	- 4.3	80	8	18	19	43	0.79	- 1.71	0.40	1.0	4	7	12	12	J. H. Flagg.
<b>Illinois.</b>																			
Chicago.....	Cook	824	39	50.6	- 2.6	76	9	29	13	24	1.20	- 1.35	0.52	T.	5	9	12	10	U. S. Weather Bureau.
<b>Indiana.</b>																			
Auburn.....	Dekalb	874	6	45.0	- 2.6	80	9	20	29	47	2.40	- 0.72	T.	6	15	1	15	Mrs. Josie Kuhlman.	
Elkhart.....	Elkhart	801	1	45.0	- 2.6	80	9	20	29	47	2.40	- 0.72	T.	6	15	1	15	Miles Medical Co.	
Fort Wayne.....	Allen	775	5	48.0	- 5.6	83	8	22	14	45	3.50	+ 1.71	1.28	T.	6	13	8	10	O. E. Mohler.
Hammond.....	Lake	598	12	49.0	- 5.6	83	8	22	14	45	3.50	+ 1.71	1.28	T.	6	13	8	10	C. W. Whitney.
Lima.....	Lagrange	886	1	45.6	- 6.4	80	9	25	28	44	2.28	- 1.18	0.6	4	17	5	9	Jas. E. Zook.	
South Bend.....	St. Joseph	726	10	47.8	- 6.4	80	8	25	14	38	2.12	- 0.32	0.74	1.0	10	14	7	10	H. H. Swaim.
<b>Michigan.</b>																			
Adrian.....	Lenawee	707	31	57.8	- 5.3	83	9	20	29	42	1.47	- 1.40	0.43	0.0	5	8	6	16	R. F. Gibbs.
Agricultural College.....	Ingham	820	45	46.2	- 2.5	80	9	21	29	38	0.71	- 1.73	0.18	0.5	11	16	11	4	Prof. A. J. Patten.
Allegan.....	Allegan	698	18	48.4	- 2.6	86	8	25	20	50	1.62	- 1.14	0.51	3.0	5	10	7	14	Agent, P. M. R. R.
Alma.....	Gratiot	750	22	44.6	- 3.9	79	9	20	29	39	0.82	- 1.82	0.35	1.0	5	8	13	10	P. M. Smith.
Alpena.....	Alpena	609	36	43.6	- 2.3	73	6	22	29	35	0.79	- 2.64	0.33	T.	10	10	7	14	U. S. Weather Bureau.
Ann Arbor.....	Washtenaw	930	29	46.5	- 3.4	80	9	22	29	34	1.27	- 1.39	0.52	T.	8	15	6	10	University of Michigan.
Arbela.....	Tuscola	728	13	46.4	- 3.6	81	8	18	29	38	1.32	- 1.46	0.68	1.5	6	3	13	15	Wm. Atkin.
Ball Mountain.....	Oakland	983	19	46.7	- 3.6	84	7	26	28	38	1.03	- 1.26	0.41	T.	6	9	0	16	F. N. Hilton.
Baraga.....	Baraga	623	7	46.7	- 5.8	79	9	22	29	38	1.03	- 1.26	0.41	T.	6	9	0	16	Agent, D. S. & A. Ry.
Battle Creek.....	Calhoun	822	25	46.0	- 5.8	79	9	22	29	38	1.03	- 1.26	0.41	T.	6	9	0	16	Elmer E. Sager.
Bay City.....	Bay	593	13	46.3	- 3.8	76	8	24	29	33	1.60	- 1.44	0.50	T.	6	7	14	10	Agent, P. M. R. R.
Benzonia.....	Benzie	832	13	46.0	- 1.4	79	9	25	29	35	3.60	+ 0.42	1.35	1.5	5	10	12	9	M. S. Joiner.
Berlin.....	St. Clair	20	44.8	- 4.1	79	9	20	29	43	1.80	- 1.03	0.82	0.5	7	8	12	11	R. O. Gould.	
Big Rapids.....	Mecosta	906	13	43.8	- 4.3	80	8	19	29	46	1.96	- 0.94	0.60	0.0	7	16	3	12	Charles Gay.
Blaney.....	Schoolcraft	2	40.4	- 4.8	80	3	12	26	50	1.83	- 0.86	0.0	8	11	10	10	Dr. S. S. Hackwell.		
Bloomington.....	Van Buren	5	48.2	- 2.2	78	8	28	121	33	1.42	- 0.50	2.5	4	15	13	3	John M. Haven.		
Cadillac.....	Wexford	1,378	5	44.4	- 0.7	80	8	21	9	35	2.19	- 0.18	1.00	10.0	9	9	4	18	A. J. Teed.
Calumet.....	Houghton	1,246	21	43.2	- 0.7	77	8	24	27	25	3.02	- 0.18	1.00	10.0	9	9	4	18	E. S. Grierson.
Cassopolis.....	Cass	903	8	47.2	- 2.2	78	9	26	131	33	1.55	- 1.28	0.58	T.	4	8	9	14	Agent, M. C. R. R.
Charlevoix.....	Charlevoix	610	22	47.2	- 2.2	78	9	26	131	33	1.55	- 1.28	0.58	T.	4	8	9	14	Agent, P. M. R. R.
Charlotte.....	Eaton	5	45.6	- 4.1	79	9	20	29	40	0.93	- 0.38	0.4	6	13	3	15	City of Charlotte.		
Chatham.....	Alger	875	8	42.4	- 3.4	76	7	16	29	36	2.10	- 0.38	0.80	T.	6	13	12	6	U. P. Express Station.
Cheboygan.....	Cheboygan	611	19	44.4	- 3.4	76	8	20	29	44	1.24	- 1.16	0.54	0.0	4	15	10	6	E. A. Bouchard.
Clinton.....	Lenawee	830	19	47.2	- 3.7	81	8	18	29	48	1.48	- 1.75	0.50	0.0	6	14	7	9	David Woodward.
Coldwater.....	Branch	984	12	47.2	- 6.4	73	8	22	29	38	1.40	- 0.60	T.	3	9	21	1	Agent, L. S. & M. S. Ry.	
Concord.....	Jackson	4	45.7	- 4.8	79	9	21	29	38	1.58	- 0.50	1.0	4	7	16	8	J. S. Arthur.		
Croton.....	Newago	681	1	46.0	- 4.9	72	8	22	29	27	1.18	- 0.30	T.	6	9	0	22	G. R. M. Power Co.	
Deer Park.....	Luce	610	8	44.9	- 4.9	72	8	22	29	27	1.18	- 0.30	T.	6	9	0	22	Mrs. Sarah E. McGaw.	
Detour.....	Chippewa	585	9	47.2	- 4.5	75	9	26	29	25	1.46	- 0.92	0.62	0.4	9	7	10	14	Nelson Ahear.
Detroit.....	Wayne	730	38	47.2	- 4.5	75	9	26	29	25	1.46	- 0.92	0.62	0.4	9	7	10	14	U. S. Weather Bureau.
Durand.....	Shiawassee	799	2	46.2	- 2.8	82	8	29											

TABLE 1.—Climatological data for October, 1909. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.			Number of cloudy days.
Michigan—Cont'd.																				
Holland.....	Ottawa.....	610	3	47.0	.....	79	8†	24	19	37	1.41	.....	0.74	1.0	7	10	12	9	se.	City of Holland.
Houghton.....	Houghton.....	968	8	45.2	.....	85	7†	27	23	35	2.83	.....	1.02	4.7	10	6	8	17	nw.	U. S. Weather Bureau.
Howell.....	Livingston.....	924	17	44.8	- 4.7	77	8	20	29	38	1.50	- 0.72	0.65	0.0	6	13	8	10	nw.	Frank Sharp.
Humboldt.....	Marquette.....	1,536	12	40.8	- 1.1	78	8	18	29	46	1.29	- 1.46	0.45	0.4	5	10	3	17	w.	Agent, D. S. S. & A. Ry.
Iron Mountain.....	Dickinson.....	1,111	8	44.9	.....	80	8	25	18†	36	1.60	.....	1.07	T.	3	8	7	13	se.	Chapin Min. Co.
Iron River.....	Iron.....	1,504	12	39.7	- 3.8	79	7†	22	15†	43	2.65	- 1.08	0.75	T.	6	14	10	7	nw.	Victor D. Laing.
Ironwood.....	Gogebie.....	1,520	6	43.3	.....	81	7†	18	28	30	4.66	.....	1.80	15.0	6	13	3	15	s.	Prof. J. V. Brennan.
Ishpeming.....	Marquette.....	1,536	6	42.8	.....	77	7†	24	28	32	1.25	.....	0.40	4.0	13	6	10	15	n.	Clo'd Cliffs Iron Co.
Ile Royale.....	Keweenaw.....	610	2	44.0	.....	66	8	28	27	21	1.83	.....	0.62	T.	5	5	2	24	nw.	John H. Malone.
Ivan.....	Kalkaska.....	20	20	43.2	- 3.2	78	8	24	20†	41	1.52	- 1.21	0.35	3.5	11	4	17	10	sw.	O. L. Giddings.
Jackson.....	Jackson.....	927	12	46.2	- 3.3	76	7†	24	29	34	1.54	- 1.00	0.48	T.	8	14	5	12	sw.	Agent, M. C. R. R.
Jeddo.....	St. Clair.....	667	20	46.2	- 3.1	78	9	22	19	32	2.07	- 0.63	0.80	6.0	7	18	2	11	sw.	William Bice.
Kalamazoo.....	Kalamazoo.....	955	33	47.8	- 3.1	78	9	17	29	35	2.35	- 0.75	0.75	T.	9	15	4	12	sw.	Kalamazoo Asylum.
Lansing.....	Ingham.....	881	22	46.2	- 3.3	79	8†	22	29	36	1.00	- 1.37	0.33	1.0	10	12	4	15	sw.	State Board of Health.
Lapeer.....	Lapeer.....	827	10	46.4	- 4.6	78	8†	21	29	40	0.91	- 1.09	0.45	T.	4	14	4	3	sw.	Michigan Home.
Ludington.....	Mason.....	586	11	44.2	.....	78	9	24	20	36	0.97	- 1.27	0.70	1.0	3	8	11	7	nw.	Agent, P. M. R. R.
Mackinac Island.....	Mackinac.....	831	9	44.2	.....	74	8	22	29	29	.....	.....	.....	.....	.....	18	5	8	e.	M. I. S. P. Com.
Mackinaw.....	Cheboygan.....	592	13	45.0	- 2.8	72	7	20	29	32	1.83	- 1.62	0.55	T.	7	10	13	8	nw.	Agent, G. R. & I. Ry.
Mancelona.....	Antrim.....	1,121	13	42.0	- 5.2	78	8	17	29	35	2.35	- 0.75	0.75	T.	9	15	4	12	sw.	Do.
Manistee.....	Manistee.....	600	12	46.2	- 2.4	80	9	24	20	36	.....	.....	.....	1.0	.....	13	7	11	sw.	Agent, P. M. R. R.
Maple Ridge.....	Delta.....	.....	3	42.0	.....	73	7	20	29	38	0.92	.....	0.26	0.0	6	11	8	12	n.	Herman Johnson.
Marquette.....	Marquette.....	734	38	45.2	- 0.5	81	8	28	27	29	1.76	- 1.43	0.36	4.0	15	5	8	18	w.	U. S. Weather Bureau.
Menominee.....	Menominee.....	581	10	44.3	- 5.2	74	7	26	28	31	0.66	- 1.74	0.36	T.	3	16	6	9	nw.	Fire Department.
Midland.....	Midland.....	604	10	48.1	- 2.0	78	8†	20	30	47	.....	.....	.....	.....	.....	10	8	13	se.	Agent, P. M. R. R.
Montague.....	Muskegon.....	660	6	46.3	.....	77	9	24	29	32	1.44	.....	0.76	0.0	3	9	11	11	sw.	G. A. Whitbeck.
Morencie.....	Lenawee.....	811	2	47.2	.....	82	9	19	29	41	1.75	.....	0.80	0.0	5	16	7	8	sw.	George J. Tripp.
Mount Clemens.....	Macomb.....	615	9	46.2	.....	76	9†	21	29	37	1.19	.....	0.55	T.	7	10	3	18	sw.	Herman H. Orbits.
Mount Pleasant.....	Isabella.....	826	10	47.4	- 1.3	79	11	20	28	41	0.53	- 1.69	0.17	.....	4	19	3	9	sw.	Agent, P. M. R. R.
Muskegon.....	Muskegon.....	587	13	45.4	- 5.7	76	9	29	13	34	0.65	- 2.04	0.40	T.	2	10	4	17	w.	Agent, G. R. & I. Ry.
Newberry.....	Lucas.....	773	8	47.2	- 2.5	82	8	28	29	31	1.73	- 1.22	0.48	0.0	11	6	11	14	nw.	Agent, D. S. S. & A. Ry.
Old Mission.....	Grand Traverse.....	848	15	44.3	- 4.6	75	9	22	29	33	1.58	- 1.06	0.37	2.0	10	16	2	13	nw.	E. O. Ladd.
Olivet.....	Eaton.....	934	18	47.0	- 1.6	74	8†	19	20†	41	.....	.....	.....	.....	.....	8	3	20	sw.	Prof. G. A. Knapp.
Omer.....	Arenac.....	616	10	47.0	- 1.6	74	8†	19	20†	41	.....	.....	.....	.....	.....	8	3	20	sw.	Agent, D. & M. Ry.
Onaway.....	Presque Isle.....	826	6	46.6	.....	79	9	20	29	36	0.83	- 1.68	0.57	T.	4	8	13	8	sw.	Do.
Ovid.....	Clinton.....	760	19	46.6	- 5.2	79	9	20	29	36	0.83	- 1.68	0.57	T.	4	8	13	8	sw.	George B. Faxon.
Owosso.....	Shiawassee.....	731	12	48.8	- 0.8	80	7	20	19	40	3.01	+ 0.21	0.75	1.5	11	9	9	13	nw.	Owosso Sugar Co.
Petoskey.....	Emmet.....	660	19	46.6	- 7.1	80	9	15	5	51	2.00	- 0.94	1.00	T.	4	8	3	15	sw.	Agent, G. R. & I. Ry.
Plymouth.....	Wayne.....	725	12	44.6	- 7.1	80	9	15	5	51	2.00	- 0.94	1.00	T.	4	8	3	15	sw.	Agent, P. M. R. R.
Pontiac.....	Oakland.....	935	9	46.8	.....	78	9	24	29	36	1.46	.....	0.60	T.	7	13	8	10	w.	Fred W. Shaw.
Port Austin.....	Huron.....	618	13	45.2	- 5.5	79	8	24	20	40	.....	.....	.....	.....	.....	5	18	7	nw.	Agent, P. M. R. R.
Port Huron.....	St. Clair.....	639	34	45.9	- 3.6	78	9	25	29	32	1.87	- 0.86	0.56	T.	10	11	6	14	sw.	U. S. Weather Bureau.
Powers.....	Menominee.....	868	8	44.0	- 1.6	79	8	18	19	44	1.40	- 2.13	0.50	1.0	4	8	18	5	n.	Agent, C. & N. W. Ry.
Reed City.....	Oceola.....	1,033	13	43.1	- 5.0	83	9	21	21	49	0.37	- 2.77	0.16	1.6	4	17	9	5	w.	Agent, P. M. R. R.
Rosecommon.....	Rosecommon.....	1,141	5	43.0	.....	75	8	14	29	54	1.53	.....	0.45	4.0	9	8	8	11	sw.	Agent, M. C. R. R.
Saginaw.....	Saginaw.....	601	7	47.2	.....	80	8	24	29	33	1.01	.....	0.40	0.5	6	7	15	9	sw.	Postmaster.
Saginaw, W. S.....	do.....	601	14	46.0	- 4.1	81	8	20	29	44	0.80	- 2.05	0.38	0.8	8	7	16	8	sw.	R. B. Hudson.
St. Ignace.....	Mackinac.....	593	19	44.2	.....	76	8	25	15†	36	1.34	.....	0.50	0.0	6	8	13	10	nw.	Agent, D. S. S. & A. Ry.
St. James.....	Charlevoix.....	681	3	44.2	.....	76	8	25	15†	36	1.34	.....	0.50	0.0	6	8	13	10	nw.	Rev. N. Wilhelm.
St. Johns.....	Clinton.....	779	17	49.4	- 3.0	81	8	30	28	31	1.42	- 1.40	0.60	0.0	4	12	3	16	sw.	City of St. Johns.
St. Joseph.....	Berrien.....	593	23	49.4	- 3.0	81	8	30	28	31	1.42	- 1.40	0.60	0.0	4	12	3	16	sw.	City of St. Joseph.
Sandusky.....	Sanilac.....	790	12	44.4	- 3.6	78	9	20	29	42	1.54	- 1.76	0.42	4.0	7	12	1	18	sw.	Agent, P. M. R. R.
Saranac.....	Ionian.....	639	14	43.2	- 0.2	74	8	22	29	31	2.07	- 1.19	0.72	1.0	13	3	7	21	se.	John Wallington.
Sault Ste. Marie.....	Chippewa.....	614	21	43.2	- 0.2	74	8	22	29	31	2.07	- 1.19	0.72	1.0	13	3	7	21	se.	U. S. Weather Bureau.
South Haven.....	Van Buren.....	585	13	46.6	- 4.7	80	8	22	17	40	1.90	- 0.39	0.50	T.	5	16	5	10	n.	Mrs. M. E. De Diemar.
Stanton.....	Montcalm.....	880	17	41.2	- 3.3	82	7	15	28	42	2.28	+ 0.19	1.50	20.0	3	4	10	17	n.	City of Stanton.
Thornville.....	Gogebie.....	1,347	12	45.5	- 5.2	72	8†	20	29	35	2.48	- 0.56	0.80	1.0	6	13	3	15	nw.	Agent, D. S. S. & A. Ry.
Thornville.....	Lapeer.....	975	32	45.5	- 5.2	72	8†	20	29	35	2.48	- 0.56	0.80	1.0	6	13	3	15	nw.	Dr. J. S. Caulkins.
Traverse City.....	Grand Traverse.....	588	12	45.5	- 5.2	72	8†	20	29	35	2.48	- 0.56	0.80	1.0	6	13	3	15	nw.	Agent, G. R. & I. Ry.
Vassar.....	Tuscola.....	641	9	43.3	.....	83	17	18	28	36	.....	.....	.....	.....	.....	10	20	11	de.	Agent, P. M. R. R.
Victoria.....	Ontonagon.....	1,605	.....	41.6	.....	79	7†	17	28	43	3.52	.....	1.21	20.6	11	0	7	14	w.	R. S. Schultz, Jr.
Watersmeet.....	Gogebie.....	1,605	.....	41.6	.....	79	7†	17	28	43	3.52	.....	1.21	20.6	11	0	7	14	w.	B. H. Grant.
Washtenaw.....	St. Joseph.....	842	12	46.6																



TABLE 1.—Climatological data for October, 1909. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		
<b>Ohio—Cont'd.</b>																				
Upper Sandusky.	Wyandot.	854	27	49.2	- 3.9	81	9	23	29	37	2.23	- 0.05	1.19	T.	6	18	7	6	w.	R. S. Kiefer.
Vickery.	Sandusky.	588	17	47.6	- 5.2	83	9	21	29	44	1.57	- 0.89	0.85	0.0	7	12	11	8	sw.	John W. Barr.
Wauseon.	Fulton.	780	40	46.8	- 4.2	82	9	20	29	42	1.93	- 0.70	0.78	T.	9	14	8	9	sw.	Thomas Mikosell.
Wellington.	Lorain.	856	17	48.0	- 5.3	80	9	24	29	38	1.71	- 0.48	0.74	T.	6	20	2	9	sw.	W. D. Warren.
Willoughby.	Lake.										1.07	- 0.87	0.44	0.0	5	7	11	13	w.	C. J. Richardson.
<b>Pennsylvania.</b>																				
Erie.	Erie.	713	36	48.7	- 4.4	79	9	32	24	26	1.59	- 2.21	0.44	T.	13	6	7	18	sw.	U. S. Weather Bureau.
<b>New York.</b>																				
Adams Center.	Jefferson.	540	18	47.5		81	10	20	30	32	5.87	+ 1.44	1.15	3.0	20	6	11	14	nw.	A. E. Cooley.
Angelica.	Allegany.	1,340	26	42.2	- 4.7	77	9	12	30	42	2.52	- 0.49	0.77	1.0	15	3	7	21	w.	Charles P. Arnold.
Appleton.	Niagara.	270	18	46.6	- 3.4	81	10	24	30	31	2.81	+ 0.13	1.00	0.3	12	11	4	16	sw.	H. A. Van Wagoner.
Auburn.	Cayuga.	715	40	47.4	- 2.3	82	9	22	30	33	1.88	- 1.57	0.75	T.	9	10	13	8	nw.	A. H. Underwood.
Avon.	Livingston.	585	14	46.0	- 4.3	79	10	20	30	36	1.91	- 0.64	0.75	T.	7	7	9	15		W. G. Markham.
Benson Mines.	St. Lawrence.		1																	R. C. Folger.
Blue Mountain Lake.	Hamilton.	1,750	9																	B. F. Merwin.
Brockport.	Monroe.	537	13	47.1	- 4.3	78	9†	23	30	29	2.59	- 0.43	0.82	T.	10	7	10	14	w.	W. H. Lennon.
Buffalo.	Erie.	767	58	47.9	- 3.6	81	9	29	29	25	2.54	- 0.99	1.12	6.0	12	7	5	19	w.	U. S. Weather Bureau
Canton.	St. Lawrence.	448	15	45.4	- 1.8	81	10	21	30	33	1.33	- 2.01	0.39	T.	13	9	3	19	w.	Do.
Cape Vincent.	Jefferson.	246	4	46.5		80	10	25	24	28	1.75		0.64	0.0	11	10	10	11	sw.	V. M. Rice.
Carvers Falls.	Washington.	243	11	46.5	- 2.3	83	10	16	30	41	1.27	- 1.71	0.34	0.0	7	16	5	10	s.	W. Fancher.
Chazy.	Clinton.	151	13	48.4	- 5.6	80	10	23	21	36	0.50		0.35	0.0	5	14	3	14	n.	W. R. North.
Dannemora.	do.	1,490	4	44.6		78	9	19	30	32	0.72		0.24	T.	4	9	2	20	w.	W. N. Thayer.
Elba.	Genesee.	500	10	43.4	- 6.4	78	9	19	30	34	2.05	- 0.72	1.00	T.	3	18	2	11	sw.	Jos. S. Wilfert.
Faust.	Franklin.	1,552	9																	Aaron W. Maddox.
Fayetteville.	Onondaga.	530	8	48.6		84	10	20	30	35	1.82	- 1.68	0.58	T.	11	10	3	18	nw.	D. H. Wells.
Gabriels.	Franklin.	1,729	7	42.0		84	9	12	30	50	1.86		0.61	3.2	9	11	6	14	w.	W. S. Everham.
Harkness.	Clinton.	622	6	46.8		81	10	22	21	30	0.42		0.12	0.5	9	21	10	0	w.	J. W. Harkness.
Hemlock Lake.	Livingston.	900	11	46.2	- 5.0	77	9	24	30	30	2.01	- 0.55	0.77	0.0	5	11	5	15	nw.	D. H. Westbury.
Hunt.	do.	1,321	10	46.4	- 4.4	84	9	18	30	38	2.26	- 0.67	0.85	0.0	6	10	6	15	nw.	W. S. Barrager.
Ithaca.	Tompkins.	928	31	46.7	- 2.8	82	9	28	29	34	2.24	- 0.93	1.18	T.	11	7	6	18	nw.	U. S. Weather Bureau.
Keene Valley.	Essex.	1,000	11	45.0	- 2.6	85	10	18	21	42	0.88	- 2.59	0.15	T.	12	10	5	16	n.	E. R. Wells.
Keuka Park.	Yates.	750	63	47.4	- 3.5	82	9	26	29†	40	1.61	- 0.99	0.47	T.	19	11	4	16	sw.	Dean L. Myers.
King Ferry.	Cayuga.		9								1.76	- 1.72	0.80	T.	8	11	6	14	nw.	L. A. Goodyear.
Lake George.	Warren.	350	4	48.2		81	10	25	30	36	0.91		0.21	0.0	7	13	8	10	n.	Charles Forsell.
Lake Placid Club.	Essex.	1,864	1	38.3		76	9	15	31	34	2.53		1.10	5.9	15	9	9	13	w.	Henry Van Hovenberg.
Le Roy.	Genesee.	920	19	46.2	- 1.6	82	9	24	30	34	2.37	- 0.23	1.00	1.0	10	9	5	17	w.	F. W. Ball.
Lockport.	Niagara.	650	22	45.8	- 5.6	77	8	24	30	30	2.95	+ 0.31	0.92	1.5	12	8	0	23	sw.	J. E. Wakeman.
Lowville.	Levitt.	900	42	43.6	- 2.6	82	10	22	30	39	2.72	- 0.67	0.85	0.0	9	10	6	15	w.	Charles J. Rice.
Lyndonville.	Orleans.		9								2.51	+ 0.26	1.74	0.0	7	14	3	14	sw.	Milton St. John.
Moir.	Franklin.	200	9	46.6	- 1.5	83	10	22	30†	33	1.15		0.39	T.	9	6	16	9	w.	C. E. McBride.
Nehasane.	Hamilton.	1,750	1	41.0		80	9	10	30	43	2.39		0.56	T.	16	13	1	17	w.	A. C. Heyburn.
North Hammond.	St. Lawrence.	300	20	47.2	- 1.3	81	10	24	20	32										
North Lake.	Herkimer.	1,822	8																	H. A. Pauls.
Ogdensburg.	St. Lawrence.	175	17	47.7	- 2.5	80	10	26	20†	32	1.06	- 1.28	0.41	T.	7	10	16	5	w.	State Hospital.
Old Forge.	Herkimer.	1,733	1	42.4		84	9	10	30	43	2.33		0.55	1.5	13	9	3	19	nw.	Stuart W. Nelson.
Oswego.	Oswego.	335	39	47.4	- 3.8	79	10	30	29	24	2.23	- 1.11	0.48	T.	13	6	7	18	nw.	U. S. Weather Bureau.
Otto.	Cattaraugus.	1,410	5	46.2		82	9	21	31	30	2.92		0.78	0.5	13	12	7	12		
Palermo.	Oswego.	460	50								1.81	- 1.74	0.66	T.	11	12	4	15	sw.	E. B. Bartlett.
Perry City.	Schuyler.	1,038	19	45.5	- 2.3	77	9	23	30	38	2.45	- 1.44	0.78	T.	10	8	6	17	nw.	W. H. Jeffers.
Philadelphia.	Jefferson.	485	3	46.8		82	10	20	30	33	2.20		0.42	T.	15	9	13	9	w.	E. D. Babcock.
Plattsburg.	Clinton.	170	50	46.4	- 1.5	76	11	24	21†	30	0.62	- 2.23	0.25	T.	8	13	8	10	s.	T. P. Davison.
Potsdam.	St. Lawrence.	300	33	46.4	+ 1.3	80	10	19	30	32	3.40	+ 1.06	0.88	T.	12	8	4	19	sw.	Lloyd W. Weed.
Raquette Lake.	Hamilton.		1	43.0		74	9	19	30	29	1.51		0.26	T.	9	10	1	20	w.	R. J. Dunning.
Rochester.	Monroe.	523	80	47.3	- 3.5	81	9	26	30	30	2.79	- 0.07	1.42	T.	9	8	8	15	w.	U. S. Weather Bureau.
Romulus.	Seneca.	719	17	48.2	- 3.0	80	10	28	30	38	1.43	- 1.79	0.64	T.	6				n.	
Scottsville.	Monroe.										1.27		0.65	0.0	4					F. Budlong.
Shortsville.	Ontario.	740	10	47.1	- 4.4	79	9	26	29†	34	1.58	- 1.16	0.42	0.0	7	12	7	12	sw.	C. H. Latting.
Skaneateles.	Onondaga.		9								2.40		0.50	0.0	15					Edward Conson.
Syracuse.	do.	597	7	47.2	- 3.8	70	10	28	30	29	1.31	- 1.90	0.50	0.3	13	6	8	17	w.	U. S. Weather Bureau.
Ticonderoga.	Essex.	344	11	49.4	- 0.8	79	10	29	26	33	0.93	- 1.81	0.70	0.0	3	18	7	6	s.	Eva M. De Lano.
Trudeau.	do.	1,620	16																	
Volusia.	Chautauqua.	1,167	10	46.5	- 4.4	78	9	23	25	31	2.89	- 0.95	1.30	4.0	6	7	11	13	s.	Benjamin Breads.
Watertown.	Jefferson.	737	16	46.6	- 3.2	78	10	21	30	27	2.90	- 0.85	0.62	T.	16	11	5	15	sw.	H. P. Dunlap.
Wedgwood.	Schuyler.	1,430	20	45.8	- 3.6	80	9	23	29	37	2.44	- 0.96	0.51	T.	15	13	7	11	nw.	O. F. Corwin.
Westfield.	Chautauqua.	837	13	46.0	- 6.6	77	10	27	30	25	2.86	- 0.94	0.83	0.0	9					John R. Rogers.
Youngstown.	Niagara.		7								2.81		0.66	2.0	9					B. V. Brookins.
<b>Vermont.</b>																				
Burlington.	Chittenden.	404	3	46.2	- 0.7	81	10	24	30	35	1.13	- 2.03	0.64	T.	8	9	16	6	s.	U. S. Weather Bureau.
Cornwall.	Addison.	507	17	47.8	- 1.9	84	10	23	30	34	0.94	- 1.46	0.30		9	12	4	15	s.	C. H. Lane.
Enosburg Falls.	Franklin.	601	19	45.2	- 2.1	86	10	21	21†	48	1.49	- 1.67	0.49	0.5	12	7	3	21	nw.	L. H. Pomeroy.
Northfield.	Washington.	876	24	43.1	- 0.5	80	10	20	30	43	1.11	- 1.37	0.49	1.3	15	7	7	17	nw.	U. S. Weather Bureau.
Wells.	Rutland.	750	18	44.8	- 3.2	74	9†	19	30	26	1.19	- 1.78	0.35	0.5	9	8	13	10	s.	E. R. Pember.

\* Precipitation included in that of the next measurement.

\*\* Temperature extremes are from observed readings of the dry-bulb; means are computed from observed readings.

† Also on other dates.

‡ Data are from standard instruments not supplied by the U. S. Weather Bureau.

§ Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

|| Estimated by observer.

¶ Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.

\*, †, ‡, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record





Stations.	River basins.	Day of month.																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
<i>Michigan—Cont'd.</i>																																	
Ironwood.....	Lake.....										.43	1.00	1.30	.05	T.								1.80	.08								T.	4.66
Ishpeming.....	Escanaba.....										.05	1.00	.05	.05	.04	.05	.05	.03	.04				.40	.30	.04			T.	.05				1.25
Isle Royale.....	Lake.....											.27	.35	.28	.31	T.	T.	T.	T.				.62	T.		T.	T.						1.83
Ivan.....	Manistee.....										.18	.35	.10	.10	T.	T.	.08	.04	.05				.15	.32		T.	T.	.10	.05	T.			1.52
Jackson.....	Grand.....																																
Jeddo.....	St. Clair.....										.48	.15	.15			T.			.09				.42		.13	T.					.11	.01	1.54
Kalamazoo.....	Kalamazoo.....										.55	.15	.80				.10	.07					.22		.18								2.07
Lansing.....	Grand.....										.16	.11	.14	.02			.11			.06		T.	.33		.05		.01			T.	.01		1.00
Lapeer.....	Saginaw.....											.26	T.				.15						.45				.05						0.91
Ludington.....	Pere Marquette.....											.17												.70									0.91
Mackinac Island.....	Lake.....										T.	T.	.55	.25		.26	.15	T.					.50	T.	.07		.05		T.	T.			1.83
Mackinaw.....	do.....										.04	.30	.08	T.		.02	.14	.28	.04	T.			.70	.75				T.	T.		T.		2.35
Mancelona.....	do.....																																
Manistee.....	Manistee.....																																
Maple Ridge.....	Lake.....										.18	.26											.18	.10				.05	.15				0.92
Marquette.....	do.....										.04	.19	.14	T.		.05	.10	.30	.03	.15		.07	.19	.06	.01		T.	T.	.17	.19		.07	0.66
Menominee.....	Menominee.....										.10	.20	T.										.38										
Midland.....	Saginaw.....									.30		.76											.38										1.44
Montague.....	White.....										.42	.10								.08			.80		.35	T.							

## MONTHLY WEATHER REVIEW.

OCTOBER, 1909

TABLE 2.—Daily precipitation for October, 1909. District No. 4—Continued.

Stations.	River basins.	Day of month.																														Total		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		31	
New York—Cont'd.																																		
Benson Mines	St. Lawrence											.37		.28		.15	T.		.20			T.	.47	.53		*	*		.30				2.30	
Blue Mountain Lake	do.	T.	T.	T.								.32	.82	T.	.01		T.		.12	.06			.18	.26		.64	.08	T.	*	*			2.59	
Brockport	Ontario	T.	10																														2.59	
Buffalo	Erie			T.								1.12	T.	.60	.14	.02	T.		.06	T.			.24	.01	.20	.07	.04	.01	T.	T.	T.	.03		2.54
Canton	St. Lawrence	T.	17	.04	.02							.07	.20	.06	.08	T.	.10	T.					.29	.21	T.	.06			T.	T.		.01	.02	2.33
Cape Vincent	do.				.07								.28	.64	*	.10	.11						.25	.15	.03	.07		.03					1.75	
Carvers Falls	Champlain				.10								.07	.34			.27		T.				.16		.19			.14					1.27	
Chazy	do.				.35								.05				.02						.05	.03									0.50	
Dannemora	do.	T.	15	.23								T.	T.		T.	T.	.24				T.		.10	T.	T.	T.	T.	T.	T.	T.		T.	0.72	
Elba	Ontario	T.	T.									T.	1.00	T.	T.		T.		T.				T.	.55	T.	.50		T.					2.05	
Faust	St. Lawrence																																	
Fayetteville	Oswego	T.	14	.13								.01	.58			.06	T.	.16	.14	.14			.05	.16		.25		T.	T.	T.	T.	T.	1.82	
Gabriels	Champlain		.61	.22	.12								.14				.18	.14		T.			.12	.23	.10	T.	T.	T.	T.	T.	T.	T.	1.86	
Harkness	do.	T.		.12									T.			.05	.04	.02					.05	.03		.05		.04	T.			.02	0.42	
Hemlock Lake	Genesee											.77			.21			.18					.20										2.01	
Hunt	do.											.85				.33	.18						.32		.35				.23				2.26	
Ithaca	Oswego		.04	T.	.10							1.18	T.		.09	T.	.01	T.	.07				.40	.03	.21	.10		.01	T.	T.			2.24	
Keene Valley	Champlain		.10	.09	.08											.05	.03	.15	.04				.08	.06		.10		.04		.06		T.	0.88	
Keuka Park	Oswego		.02	.02	.01		.02					.14	.47	T.	.01	.03	.02	.01	.10	.04				.04	.31	.04	.30	.01		.01	.01			1.61
King Ferry	do.				.10							.80			T.				.15	.05			.26	*	.25	.12	.03						1.76	
Lake George	Champlain			T.								.21			.13	T.	T.	T.					.21	.17	.12	.03		T.	T.			0.4	0.91	
Lake Placid Club	do.		.36	.21	T.							.10	.05	T.	.08	.11	.09	T.					.09	.05	.07	.05	.03	T.		.09	.05		1.10	
Le Roy	Genesee		.04	.02	T.							1.00	T.	T.	.04		.06		.15				.29	.06	.30	.41		T.	T.				2.37	
Lockport	Ontario		.13	T.	T.							.92	.32	.45	.10		.03		.08				.18	.11	T.	.34		.08	.01	T.			2.95	
Lowville	do.		.15										.58			.85	.12	.12					.18	.42		.20				.10			2.72	
Lyndonville	do.											*	*	1.74		.11	.17												.01				2.51	
Moir	St. Lawrence		.10	.14									.06	.04		.14	T.		T.				.17	.39	.03	.08		T.	T.			T.	1.15	
Nehasane	Ontario		.13	.19	.10								.28	.06		.16	.15	.18	.05	.02			.12	.56	.18	.10		.03	T.	T.		.08	2.39	
North Hammond	St. Lawrence																																	
North Lake	Ontario																																	
Ogdensburg	St. Lawrence		.08									*	.21	T.	T.	T.		.55					.41	.16	.13	.05						.02	1.06	
Old Forge	Ontario		.16	.10	.13								.34			.02	.55			.02				.21	.51	.15	.07			.05	.02			2.33
Oswego	do.		.48		T.							.44	T.	T.	.20	.02	.25		.24				.28	.06	.08	.07		.06	.01	.04			2.23	
Otto	Erie		.78	.10	.03							.25						.10	.15	.05	.06		.45		.02			.45	.45	.03		T.	2.92	
Palermo	Oswego		.02	.68	T.							.02	.43	T.	T.	.05	.10	.04	T.				.03	T.	.15	.30							1.81	
Perry	do.				.10	.04						.10	.78					.07					.10	.62	.03	.47	.14						2.45	
Philadelphia	St. Lawrence		.29	.19	.06							T.	.29	.05	.09	.15	.42	.01	.04	T.			.07	.28	.12	.09		.05		T.			2.20	
Plattsburg	Champlain		.02	.01	.25								.10		.02		.08						T.	.13		.01			T.	T.			0.62	
Potsdam	St. Lawrence		.88	.23	.27								*	.45		.09	.33						.12	.59	.15	.08			T.	T.			3.40	
Raquette Lake	do.		.19										.15			.06	T.	.25					.16	.26	.09	.12			T.	T.		*	2.3	
Rochester	Genesee		.02		T.	T.						1.42	T.	T.	T.		T.		.10				.33	T.	.55	.30	.02	.04	.01	T.			1.51	
Romulus	Oswego		.08									T.	.24						.21				.14	T.	.64	.12							1.43	
Scottsville	Genesee												1.00						.12					.40	.65								1.27	
Shortsville	Oswego											.20	.37			.15	T.		.08				.40	.32		.42							1.58	
Skaneateles	do.	T.	.10	.03								.50	.20	.02	T.	.10	.05	.07	.18				.25	.30	.19	.11	.05		T.	.25			2.40	
Syracuse	do.		.05	.04	.05							.50	T.		.03	T.	.04	.04	.20	T.			.17	.04	.07	.07		.01	T.	T.	T.		1.31	
Ticonderoga	Champlain												.70		.18									.05								T.	0.93	
Trudeau	do.																																	
Volusia	Erie		.53									T.	T.			T.	.79		.17				T.	.03	T.	1.30							2.89	
Watertown	Ontario		.27	.21	.08							T.	.23	.01		.26	.62	.09	.07				.08	.46	.15	.17				.11			.02	2.90
Wedgwood	Oswego		.03		.03	.02						.46	.37		.01		.09	.06	.03	.10				.05	.46	.08	.51	.14		T.	T.			2.44
Westfield	Erie		.27									.17	.06	T.		.83			.37				.12	.13	.19	.66			T.			T.	2.80	
Youngstown	Ontario		.54									.66	.60	.03									.49		.09	.12		.24				.04	2.81	
Vermont.																																		
Burlington	Champlain	T.	.64									.22			.02	.07	T.	T.	T.				.12	.03	.02	.01	T.		T.	T.	T.		T.	1.13
Cornwall	do.		.05	.05	T.							.15			.05		.05	T.	T.				.07	.20	.30	T.	.02	T.	T.				0.94	
Enosburg Falls	do.		.16	.49		.02						.18	T.			.17	.05		T.				.09	.19	.07			T.	T.		.01	.05	T.	1.49
Northfield	do.		.02	.04								.49			.04	.07	.01	.01	.03				.21	.01	.04	.04	.05		T.		.03	.02	T.	1.11
Wells	do.		.03	T.								.35			.15	.04	T.	.05					.18	.10		.16	.10							1.11



TABLE 3.—Maximum and minimum temperatures at selected stations, October, 1909. District No. 4, Lake Region.

Date.	Duluth, Minn.		Wisconsin.								Chicago, Ill.		Fort Wayne, Ind.		Michigan.															
			Florence.		Green Bay.		Milwaukee.								Alpena.		Battle Creek.		Cadillac.		Detroit.		Escanaba.		Ewen.		Houghton.		Marquette.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.		
1...	60	40	62	28	68	37	60	45	60	51	66	35	53	40	61	35	58	42	58	38	58	32	.....	.....	53	39	52	40		
2...	49	44	57	34	58	40	63	49	49	52	72	33	60	39	67	33	61	36	62	39	53	41	.....	.....	52	39	49	43		
3...	61	38	67	31	59	44	63	55	63	59	69	47	58	37	67	45	64	36	61	46	54	38	.....	.....	58	46	50	41		
4...	47	38	64	36	61	43	65	50	61	56	67	39	60	31	63	37	63	40	59	45	57	42	.....	.....	58	47	50	43		
5...	63	46	70	36	69	41	63	51	61	55	68	38	63	33	66	37	70	35	64	50	61	39	.....	.....	70	45	74	45		
6...	73	52	74	36	71	44	66	50	63	53	73	37	73	38	70	35	72	39	67	49	64	42	.....	.....	82	47	79	54		
7...	67	55	74	40	78	47	73	50	74	56	80	41	65	40	76	38	77	45	69	48	64	50	.....	.....	85	50	81	52		
8...	71	59	74	43	80	53	68	55	72	59	80	39	65	42	76	42	80	50	72	48	65	44	.....	.....	83	58	81	61		
9...	63	52	71	43	76	55	68	60	76	60	82	39	62	44	79	46	78	52	75	52	66	52	.....	.....	78	52	77	55		
10...	59	35	63	50	62	48	63	45	65	48	64	52	67	48	65	52	62	52	71	54	61	50	.....	.....	64	51	62	50		
11...	35	26	55	35	48	31	48	32	50	38	59	42	58	41	58	41	55	37	54	41	51	33	.....	.....	51	36	50	36		
12...	31	25	37	29	33	28	34	28	38	31	44	30	42	34	43	28	42	27	41	31	42	31	.....	.....	36	33	42	33		
13...	34	29	33	28	39	31	41	30	45	29	47	28	39	35	37	27	32	28	40	31	37	33	.....	.....	36	32	38	33		
14...	42	30	39	28	43	32	44	29	52	29	52	30	40	31	46	28	35	28	47	33	44	31	.....	.....	41	34	42	32		
15...	42	33	41	32	45	32	43	33	44	34	47	30	48	31	43	34	40	32	46	31	45	31	.....	.....	42	37	43	33		
16...	40	33	43	31	45	33	47	33	50	34	54	37	47	32	49	35	45	32	47	34	47	32	.....	.....	44	38	42	34		
17...	41	32	41	31	49	34	49	33	49	40	56	27	47	31	52	37	.....	.....	51	40	47	32	.....	.....	41	35	43	32		
18...	38	32	42	25	46	31	46	36	49	45	50	41	49	30	49	35	49	32	50	40	46	30	.....	.....	40	37	43	33		
19...	42	32	44	28	49	30	49	33	50	44	56	25	46	30	50	27	48	25	50	35	45	29	.....	.....	43	33	42	34		
20...	47	34	51	23	53	34	51	46	54	45	58	29	50	28	55	27	53	28	51	38	50	33	.....	.....	52	32	50	35		
21...	46	39	49	39	51	46	56	46	64	53	69	48	54	42	59	42	50	40	63	51	52	44	.....	.....	46	42	49	41		
22...	40	36	49	35	46	36	49	41	53	43	58	43	47	39	53	43	46	37	51	42	46	34	.....	.....	42	37	44	38		
23...	42	31	39	29	41	33	43	35	47	39	48	34	39	34	44	33	39	29	42	37	37	33	.....	.....	38	32	38	34		
24...	45	30	40	25	40	30	45	33	45	34	45	32	43	32	44	30	45	27	42	34	43	31	.....	.....	41	29	40	31		
25...	54	36	45	30	48	37	53	36	55	37	55	28	44	32	50	28	42	32	47	33	45	38	.....	.....	45	36	46	37		
26...	46	33	48	32	57	39	60	41	62	42	65	34	63	39	60	35	56	36	61	39	55	36	.....	.....	48	37	52	34		
27...	33	20	44	20	39	27	45	28	52	35	56	37	40	32	50	35	45	30	46	29	36	29	.....	.....	37	28	34	28		
28...	39	18	40	20	41	26	41	28	43	29	47	25	39	25	42	25	38	25	43	27	40	30	.....	.....	37	27	37	29		
29...	52	34	40	21	46	30	48	35	50	38	51	22	41	22	44	22	32	21	42	26	43	30	.....	.....	45	31	43	31		
30...	68	40	73	30	67	44	71	45	70	46	70	33	51	36	68	37	63	31	64	39	55	43	.....	.....	68	43	66	43		
31...	46	38	59	35	66	48	73	54	74	56	75	38	62	42	72	45	67	48	69	46	56	42	.....	.....	47	39	53	41		
Mns	48.9	36.1	52.5	31.7	54.1	37.5	54.5	40.8	56.9	44.2	60.7	35.3	52.1	35.2	56.7	35.3	53.6	35.1	55.0	39.5	50.5	36.6	.....	.....	51.7	38.8	51.4	38.9		

Date.	Michigan.						Ohio.						New York.						Vermont.									
	Muskegon.		Saginaw, W. S.		Sault Ste. Marie.		Cleveland.		Lima.		Sandusky.		Toledo.		Erie, Pa.		Buffalo.		Canton.		Rochester.		Syracuse.		Burlington.		Northfield.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	61	44	62	42	47	43	53	43	64	30	55	45	61	42	53	48	52	46	50	44	57	46	51	45	57	46	56	45
2...	62	45	64	34	53	42	56	43	67	34	58	42	65	43	57	49	55	45	55	44	53	46	55	44	57	46	55	43
3...	64	46	61	36	58	40	58	43	67	46	60	44	61	48	55	49	52	47	54	46	55	50	53	46	52	42	53	36
4...	63	42	63	38	59	42	59	49	65	41	60	51	59	43	58	50	59	50	61	42	61	47	60	41	60	36	56	35
5...	60	38	66	36	61	40	60	49	67	40	62	50	62	50	60	47	65	43	66	40	62	41	63	42	67	35	65	29
6...	62	30	73	37	70	43	61	47	72	40	63	46	67	46	63	46	65	48	65	45	67	43	65	43	69	40	68	32
7...	60	36	77	39	72	41	65	46	75	44	66	49	69	45	65	46	64	53	69	46	72	45	68	49	68	46	70	38
8...	45	36	81	37	74	46	70	49	78	43	70	53	73	54	67	49	73	52	75	50	77	47	75	48	75	46	76	39
9...	76	42	78	43	66	49	80	53	80	46	75	52	75	53	79	58	81	56	78	48	81	52	78	52	76	47	79	44
10...	60	54	72	54	67	54	76	55	70	57	76	55	71	54	78	60	79	63	81	48	80	54	70	61	81	46	80	37
11...	56	36	60	41	57	41	62	42	60	43	58	41	54	41	62	49	66	51	75	56	65	52	67	52	75	54	70	44
12...	36	30	43	31	41	34	42	33	56	39	41	34	41	34	49	35	53	38	56	38	52	37	56	37	65	43	64	43
13...	41	29	35	31	41	31	42	32	46	31	44	32	44	32	41	33	41	32	38	33	39	35	39	33	46	33	48	29
14...	41	34	48	30	40	31	50	39	50	40	48	40	49	39	51	41	52	35	52	33	53	36	55	38	50	36	50	36
15...	46	40	46	31	41	33	47	37	57	46	47	35	48	32	46	35	47	38	51	36	50	38	49	40	51	40	52	30
16...	45	40	50	32	43	34	47	36	48	35	48	37	50	37	49	37	47	38	46	35	48	37	49					

**Climatological Data for October, 1909.**  
**DISTRICT No. 5, UPPER MISSISSIPPI VALLEY.**

GEORGE M. CHAPPEL, District Editor.

**GENERAL CLIMATOLOGICAL CONDITIONS.**

The weather during October was, on the whole, favorable for farm and other out-of-door operations, although it was somewhat cooler than usual; and, while there were long periods of rainy weather, the average precipitation was below the normal. The most striking features of the weather for the month were the severe freeze on the 12th and 13th and the snowstorm on the 11th and 12th.

Iowa records show that, during the past nineteen years, there have been five cooler Octobers, but there are no records of as low temperature during the first fifteen days of October as was registered this month on the 12th and 13th. The ground was frozen to such an extent that potatoes remaining in the ground were considerably damaged; cabbage and turnips were also injured, and many thousand bushels of apples were frozen on the trees. As there had been no killing frosts or freezing temperatures previously to the 12th, much of the vegetation was still green, and corn, though ripe, was not dry enough to withstand such a severe freeze without injury to its germinating qualities.

**TEMPERATURE.**

The average temperature was below the normal in all of the States in the district, the greatest deficiency being in Illinois and the least in North Dakota. The month opened with clear weather and high temperatures which continued until the 7th in North Dakota and until the 9th in southern Illinois. During this period the maximum temperature for the month was recorded at all stations, occurring generally on the 2d or 3d in southern and on the 6th, 7th, or 8th in northern portions of the district, and ranging from 83° to 97° over North Dakota, 74° to 89° over Minnesota, 74° to 86° over Wisconsin, 76° to 97° over Iowa, 89° to 94° over Missouri, 75° to 83° over Indiana, and from 76° to 95° over Illinois. From the 11th to the 28th the temperature was below the normal and most of the time the weather was unusually cold. The monthly minimum occurred generally on the 12th or 13th over the southern and on the 27th or 28th over the northern sections. Temperatures as low as zero were recorded in North Dakota on the 13th and one station reported 1° below zero on the 27th. In Minnesota the minimum temperature ranged from 7° in Millelacs County to 23° at Minneapolis on the 28th. In Wisconsin the minimum ranged from 9° in Douglas to 24° at Madison, Dane County, on the 28th. In Iowa the minimum ranged from 10° at Fayette, Fayette County, to 23° at several stations along the Mississippi River, on the 13th in the southern and on the 28th in the northern counties. In Missouri the minimum ranged from 20° in Pike County to 24° in Marion and Lewis counties on the 13th; in Indiana, from 22° in Jasper County to 24° in Starke County, on the 14th; in Illinois, from 13° in Carroll County on the 28th to 33° at Cairo, Alexander County, on the 13th. The monthly mean for the district, as shown by the records of 300 stations, was 47.2°, which is 2.3° below the normal. The highest monthly mean temperature was 59.5° at Cairo, Alexander County, Ill., and the lowest monthly mean was 39.5° at Granville, McHenry County, N. Dak. The highest temperature was 97° at Forman, Sargent County, N. Dak., on the 7th, and at Bloomfield, Davis County, Iowa, on the 2d; the lowest temperature reported was -1° at Hanna, Cavalier County, N. Dak., on the 27th; the average monthly maximum was 84° and the average monthly minimum was 17°; the greatest daily range of temperature was 56° at Mexico, Audrain County, Mo. The average of the greatest daily ranges was 40°.

**PRECIPITATION.**

The average total precipitation for the month was below the normal for the district, and for all the States in the district

except Missouri and Illinois, and the one reporting station in South Dakota. The first seven or eight days of the month were generally clear and dry, but from the 8th or 9th rainy weather prevailed in all sections until the 12th to the 13th, after which showery weather, alternating with fair days, prevailed until the 25th. With the exception of the 31st, the last six days were fair and pleasant. In North Dakota the precipitation was somewhat unevenly distributed, both geographically and throughout the month. The average was slightly more than one-fourth inch below the normal.

In Minnesota the precipitation varied from less than one inch in a number of counties, including portions of the Mississippi and Minnesota River watersheds to over 4 inches in the north-central counties, in the Lake of the Woods and Rainy River Drainage basins. In the northeastern counties, and in Washington and Ramsey counties, there was a considerable excess in precipitation; elsewhere there was a deficiency ranging from about one-half to over 2 inches. In Wisconsin the precipitation was light at all stations, and most of it fell on the 10th, 11th, 12th, and 21st. In Iowa the precipitation was generally below the normal over the northern two-thirds of the State and slightly above the normal over the southern third. In Missouri there was an excess of precipitation over the Mississippi and Chariton River basins. The average precipitation was above the normal in Illinois, although there was a deficiency at many stations on the Mississippi River watershed. Considerable of the precipitation fell in the form of snow on the 11th and 12th, especially in the northern part of the district; the amounts ranging from a trace over the southern and central section to 22 inches in northern Wisconsin and 13 inches in northern Minnesota. The snow remained on the ground in some localities in southern Wisconsin until the 20th. The average precipitation for the district, as shown by the records of 319 stations, was 1.87 inches, which is 0.32 inch below the normal. The greatest amount, 6.96 inches, occurred at Louisiana, Pike County, Mo.; and the least, a trace, at Dunseith, Rollete County, and Langdon, Cavalier County, N. Dak. The greatest amount in twenty-four hours, 2.55 inches, occurred at Hannibal, Marion County, Mo., on the 17th and 18th. Measurable precipitation occurred on an average of six days. There were no excessive daily or hourly amounts of precipitation reported; the largest daily amount reported was 2.31 inches at Bondette, in the Rainy River watershed, in Minnesota, on the 10th.

**RIVER CONDITIONS.**

The Minnesota, Mississippi, and Des Moines rivers were somewhat lower than usual; the stage of the latter at Des Moines ranged from 2.4 feet on the 1st of the month to 2.0 feet on the 31st. The Illinois River at Peoria, Ill., registered a stage of 9.5 feet on the 1st, continued about stationary until the 5th, after which it fell slowly until the 21st, when it reached a stage of 8.8 feet. It rose during the last nine days of the month to 9.6 feet on the 31st.

**MISCELLANEOUS.**

A storm of unusual violence for the season passed over central Illinois on the evening of the 22d. It showed tornadic characteristics at places. At Decatur, in Macon County, some buildings were demolished and trees uprooted. It also wrought considerable destruction in Morgan County. Shock corn was scattered and blown away, and standing corn badly twisted.

An auroral display was observed north of northern Iowa and Illinois on the 18th, and at some of the extreme northern stations on the 19th. The aurora on the 18th is said to have been very bright, the streamers, at times, reaching the zenith.



*Weather.*—The average number of clear days was 15; partly cloudy, 6; and cloudy, 10.

*Wind.*—Northwest winds prevailed.

#### RECLAMATION AND DRAINAGE WORK IN IOWA.

Iowa, being a prairie State, having sufficient moisture for agricultural needs, irrigation is not necessary; but there is, nevertheless, a vast amount of engineering work being done in the way of draining and reclaiming the river bottoms and flat lands, especially in the northern and western counties. River channels are being straightened to prevent the overflow of the bottom lands during periods of excessive rainfall and the resulting high stages of the rivers and creeks. The flat prairie lands are being tiled and ditched to facilitate the rapid flow off of the surplus moisture and to insure proper conditions for cultivation of the soil during the growing season. The expense of this work is not comparable with the amounts being expended in many of the irrigation schemes now under construction in some of the western States, but the results will add materially to the output of the agricultural products of the State as well as to increase the price of the land drained.

In reply to a letter from the District Editor, Mr. A. J. Lilly, Drainage Engineer and County Surveyor of Kossuth County, Iowa, says that he has under operation the draining of about 80,000 acres. The total length of the ditches, tile, and open work is about 250 miles, and the total cost will be \$650,000. The acreage affected is not all wet or swamp land, but is in the watershed and is more or less benefited by the improvement. Many other projects of similar characters are under construction in the State, reports of which will be given in future numbers of the MONTHLY WEATHER REVIEW.

#### IOWA STATE DRAINAGE, WATERWAYS, AND CONSERVATION COMMISSION.

The General Assembly of the State of Iowa passed an act in April, 1909, authorizing the establishment of a commission for the purpose of investigating the entire question of the relation of the State to its waters, its forests, its soils, and its minerals, and it was provided that the investigation shall include the following:

Article 1. The present condition of public drainage in Iowa and the benefits which can be derived by securing the best of drainage engineering

practice, the most economical administration of drainage projects, and a more economical method of financing at lower rates of interest, and show methods by which all of these benefits may be secured.

Article 2. The present condition of all overflow of flood plain lands of Iowa, showing losses due by floods in the destruction of farm crops, the losses due by destruction of property in cities, towns, and built-up districts, the losses due by the withdrawal from crop cultivation of such flooded lands, and recommending the proper methods of prevention of such flood conditions.

Article 3. The survey of at least one representative Iowa river to ascertain the available dam sites and the potential water power, and to report the best method of procedure to bring about development of the water powers of the State, at the same time retaining the ultimate control of the water supply as a property of the State.

Article 4. To cooperate with the United States Survey, provided by act of Congress, and investigate the possibilities of navigation upon the rivers or upon adjoining lands by canal, and to secure the aid of Government experts when practicable in the several matters investigated by this commission.

Article 5. The question of forests and their preservation and their culture in the State, and especially with reference to the influence of forests upon the flood conditions of the rivers and the erosion and waste of the soils.

Article 6. It is the clear intent and purpose of this bill that the close interrelation of the several phases of river development shall be shown, and the necessity for a broad comprehensive treatment of our rivers shall be studied and reported upon.

Article 7. The general question of the relation of the State to the preservation of the fertility of the Iowa soils.

Article 8. The general question of the wise and conservative development and use of the mineral resources of the State, especially with reference to the mining of coals.

Article 9. And the general question of the nature and condition of such lakes in Iowa as now belong to the State, the relation of lakes and streams to the preservation of such varieties of fish, birds, and native animals as are desirable, and the preservation of the peat beds which now belong to the State.

As provided by the law, the governor appointed seven competent men as commissioners who were enthusiastic in the work. Active operations were begun September 15, 1909, under Mr. George D. Dobson, a competent engineer, who has been appointed as secretary of the commission, and the work must be finished and a report made to the next General Assembly January 1, 1911.

Secretary Dobson, from whom the above facts were obtained, has promised to write articles, from time to time, for publication in the MONTHLY WEATHER REVIEW, describing what has been accomplished.

TABLE 1.—Climatological data for October, 1909. District No. 5, Upper Mississippi Valley.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		
<b>North Dakota.</b>																				
Amenia.....	Cass.....	954	11	45.9	+ 1.6	90	7	16	28	51	1.42	- 0.01	0.98	0.0	3	17	4	10	nw.	C. E. Wood.
Bottineau.....	Bottineau.....	1,638	13	39.9	- 3.1	85	6	10	27	43	0.43	- 0.72	0.32	6.0	3	7	10	nw.	J. A. Kamp.	
Cando.....	Towner.....	1,458	7	41.0	.....	86	7	11	13	51	0.10	.....	0.10	T.	1	.....	.....	.....	E. T. Judd.	
Crosby.....	Williams.....	85	4	41.6	.....	85	4	0	13	43	0.49	.....	0.20	2.0	4	18	7	6	nw.	B. Lancaster.
Donnybrook.....	Ramsey.....	1,482	3	41.5	.....	87	6	9	27	34	0.21	.....	0.14	0.6	7	9	8	14	nw.	U. S. Weather Bureau.
Dunseith.....	Ward.....	1,760	9	42.8	.....	86	6	9	14	43	1.20	.....	1.10	1.0	2	10	12	9	nw.	F. S. Gieselman.
Edmore.....	Rolette.....	1,524	3	39.7	- 2.2	87	5	7	27	42	T.	- 0.67	T.	T.	0	20	5	6	n.	L. H. Trowbridge.
Forman.....	Ramsey.....	1,249	14	51.0	+ 6.1	80	6	7	27	43	0.90	.....	0.30	4.0	5	14	11	6	n.	H. R. Aslakson.
Grafton.....	Sargent.....	827	11	42.5	.....	97	7	14	13	46	1.74	+ 0.22	0.60	2.0	4	7	11	13	nw.	A. Maltby.
Granville.....	Walsh.....	1,504	2	39.54	.....	89	6	9	13	41	0.53	.....	0.46	0.5	3	.....	.....	.....	nw.	H. Lamoure.
Hamilton.....	McHenry.....	824	11	40.4	.....	89	5	1	27	43	0.36	.....	0.30	0.0	3	.....	.....	.....	nw.	W. A. Christiansen.
Hannah.....	Pembina.....	1,568	3	40.4	.....	89	5	1	27	43	0.36	.....	0.30	0.0	3	.....	.....	.....	nw.	D. Wallace.
Hansboro.....	Cavalier.....	901	3	45.0	.....	87	6	2	27	41	0.20	.....	0.20	T.	1	17	2	12	nw.	J. Moffatt.
Hillsboro.....	Towner.....	1,519	2	42.9	.....	89	6	15	28	37	0.79	.....	0.33	T.	7	16	3	12	nw.	Geo. Dale.
Lakota.....	Trails.....	1,615	13	43.1	.....	89	5	15	29	41	T.	.....	T.	T.	0	16	0	15	nw.	M. H. Norman.
Langdon.....	Nelson.....	1,134	13	43.1	.....	89	5	15	29	41	T.	.....	T.	T.	0	16	0	15	nw.	C. R. Pettes.
Larimore.....	Cavalier.....	1,091	4	43.4	.....	90	6	12	28	51	1.43	.....	0.72	T.	5	10	5	16	nw.	J. Woolner.
Lisbon.....	Grand Forks.....	1,640	14	41.2	- 0.4	86	6	8	13	47	0.75	+ 0.08	0.75	T.	5	10	5	16	nw.	M. Naylor.
McKinney.....	Ransom.....	1,605	7	42.6	.....	89	5	9	12	41	0.87	.....	0.52	3.0	3	18	4	9	nw.	H. K. Adams.
Manfred.....	Wells.....	975	13	47.3	+ 2.2	89	6	20	13	41	0.45	- 1.03	0.45	0.0	1	11	0	20	s.	M. P. Swenson.
Mayville.....	Trails.....	1,557	10	42.5	- 2.1	86	4	10	13	46	1.03	+ 0.22	0.82	1.0	3	21	4	6	w.	P. B. Anderson.
Minot.....	Sargent.....	820	15	43.1	+ 0.9	88	6	14	27	41	0.47	- 0.61	0.33	0.2	3	15	6	10	nw.	M. N. Pope.
Minto.....	Walsh.....	1,270	3	43.8	.....	88	6	14	13	52	0.63	.....	0.38	0.5	4	7	19	5	nw.	O. B. Jorgenson.
Orioka.....	Barnes.....	998	5	39.8	- 2.0	83	8	8	30	37	0.62	- 0.42	0.32	T.	2	19	8	4	w.	J. J. Bates.
Park River.....	Pembina.....	789	10	39.8	- 2.0	83	8	8	30	37	0.62	- 0.42	0.32	T.	2	19	8	4	w.	S. S. Marsh.
Pembina.....	Pembina.....	1,954	14	44.8	- 1.6	90	6	13	13	37	1.98	+ 0.28	0.69	T.	5	11	10	10	se.	W. E. Williams.
Portal.....	Ward.....	1,020	16	43.4	- 1.6	88	6	10	13	50	0.41	.....	0.41	0.0	1	25	6	0	nw.	A. Heyward.
Power.....	Richland.....	1,475	2	44.8	.....	88	6	10	13	50	0.41	.....	0.41	0.0	1	25	6	0	nw.	F. C. Warner.
Pratt.....	McHenry.....	830	17	43.4	- 0.3	86	7	10	27	40	0.45	- 0.99	0.36	T.	4	13	16	2	nw.	M. S. Davis.
Towner.....	Grand Forks.....	962	17	41.8	.....	88	6	10	13	39	1.58	.....	1.18	T.	2	14	2	15	nw.	J. A. Power.
University.....	Richland.....	966	4	44.8	.....	91	5	14	27	41	1.28	.....	1.09	T.	3	16	10	3	se.	C. H. Butts.
Wahpeton.....	Pembina.....	966	4	44.8	.....	91	5	14	27	41	1.28	.....	1.09	T.	3	16	10	3	se.	B. Bagley.
Walhalla.....	Bottineau.....	1,471	15	41.2	- 1.0	89	6	9	27	45	0.27	- 0.27	0.20	T.	2	12	8	11	nw.	G. W. Stewart.
Westhope.....	do.....	1,471	15	41.2	- 1.0	89	6	9	27	45	0.27	- 0.27	0.20	T.	2	12	8	11	nw.	E. G. Burch.
Willow City.....	do.....	1,471	15	41.2	- 1.0	89	6	9	27	45	0.27	- 0.27	0.20	T.	2	12	8	11	nw.	Chas. H. Lee.
<b>Minnesota.</b>																				
Albert Lea.....	Freeborn.....	1,229	19	47.0	- 1.1	82	7	17	28	40	1.27	- 0.86	0.67	T.	2	7	16	8	nw.	J. D. Currie.
Alexandria.....	Douglas.....	1,391	15	44.6	- 1.2	89	5	17	28	45	1.30	- 0.38	0.80	T.	4	15	1	18	nw.	M. A. Ostby.
Angus.....	Polk.....	870	7	43.4	.....	85	6	12	27	42	0.58	.....	0.16	0.0	6	12	4	15	nw.	Edward Carey.
Bagley.....	Clearwater.....	85	3	42.5	.....	85	8	12	28	44	1.72	.....	0.80	T.	6	12	2	17	nw.	P. O. Unumb.
Baudette.....	Beltrami.....	1,090	16	45.8	- 0.8	89	6	13	13	39	1.99	+ 0.07	0.92	1.0	6	8	15	15	nw.	F. A. Wilson.
Beardsley.....	Bigstone.....	1,200	7	43.8	.....	85	6	14	28	32	0.92	.....	0.92	T.	11	1	16	12	nw.	Edward T. Teitsworth.
Beaulieu.....	Mahnomen.....	1,039	19	44.4	- 3.7	82	7	15	28	37	0.92	- 0.95	0.59	T.	6	13	6	12	nw.	Frans W. Schmidt.
Bird Island.....	Houston.....	1,179	16	46.6	- 2.2	74	8	20	28	38	2.07	- 0.62	0.75	T.	5	14	3	14	nw.	Roy A. Smith.
Caledonia.....	Wilkin.....	984	3	43.2	.....	88	6	16	28	43	1.59	.....	1.00	0.2	7	11	3	17	se.	Dr. L. A. Parkinson.
Cass Lake.....	Cass.....	1,300	3	44.3	.....	89	5	17	28	40	1.27	- 0.86	0.67	T.	2	7	16	8	nw.	W. D. Belden.
Collegeville.....	Stearns.....	1,282	16	44.3	- 0.4	89	5	17	28	40	1.27	- 0.86	0.67	T.	2	7	16	8	nw.	J. T. Ness.
Crookston.....	Polk.....	1,364	19	41.5	- 2.4	86	6	12	28	43	1.78	- 0.54	0.78	1.0	5	17	1	12	nw.	C. W. Burns.
Detroit.....	Becker.....	753	22	46.5	- 1.3	79	7	18	13	35	1.74	- 0.04	0.85	T.	5	17	8	6	nw.	Fridolin Tennbreull.
Fairmont (near).....	Martin.....	1,003	22	46.3	- 3.6	81	7	18	28	36	1.97	- 0.86	1.22	T.	6	16	5	10	nw.	A. G. Anderson.
Faribault.....	Rice.....	902	21	46.4	- 1.2	80	7	18	28	33	0.97	- 0.86	1.22	T.	6	16	5	10	nw.	G. W. Peoples.
Farmington.....	Dakota.....	1,210	17	44.4	- 1.8	82	6	18	12	24	1.26	- 0.44	0.49	0.5	9	10	12	9	nw.	W. F. Wherland.
Fergus Falls.....	Ottertail.....	1,135	3	43.4	.....	85	7	8	28	42	1.14	.....	0.50	0.0	4	10	3	18	nw.	A. R. T. Wylie.
Fort Ripley.....	Polk.....	1,288	13	42.0	.....	84	6	14	28	39	2.13	- 2.08	0.60	T.	2	10	11	16	nw.	D. F. Akia.
Glencoe.....	McLeod.....	1,006	13	47.2	.....	84	7	20	13	36	0.90	.....	1.30	T.	6	14	1	16	nw.	Chas. E. Kissenger.
Grand Meadow.....	Mower.....	1,338	22	47.1	+ 0.4	83	2	15	28	41	1.37	- 1.20	0.62	0.5	4	12	9	10	nw.	J. J. Tucker.
Hallock.....	Kitsop.....	815	10	42.7	- 1.0	83	6	12	27	42	0.33	- 0.67	0.25	T.	5	15	5	11	nw.	O. N. Hem.
Halstad.....	Norman.....	870	3	44.4	.....	89	6	16	27	42	0.98	.....	0.33	0.2	6	15	5	11	nw.	C. G. Selvig.
Hickley.....	Pine.....	1,050	4	45.8	.....	81	7	21	12	43	1.30	.....	0.33	0.2	6	15	5	11	nw.	C. F. Greening.
International Falls.....	Koochiching.....	1,432	1	43.4	.....	82	6	14	28	37	5.49	.....	2.00	4.0	8	10	5	16	nw.	D. A. Robertson.
Kelliher.....	Beltrami.....	82	3	42.2	.....	82	6	13	28	39	4.07	.....	0.84	5.6	7	9	10	12	nw.	A. G. Holstrom.
Lake Crystal.....	Blue Earth.....	1,300	21	42.3	- 0.5	81	6	14	28	41	2.35	+ 0.29	0.81	1.0	7	7	12	12	nw.	W. R. Newman.
Leech Lake Dam.....	Cass.....	1,129	1	43.3	.....	83	7	18	28	33	0.77	- 1.56	0.28	T.	5	8	15	8	nw.	Ross Roe.
Litchfield.....	Meeker.....	1,117	3	43.2	.....	83	7	15	28	32	0.77	- 1.56	0.28	T.	5	8	15	8	nw.	A. Gilmour.
Little Falls.....	Morrison.....	1,299	17	44.0	- 1.2	85	7	11	28	45	0.80	.....	0.53	T.	3	10	9	12	nw.	W. P. Cobb.
Long Prairie.....	Todd.....	1,299	17	45.6	- 2.3	86	6	17	13	48	1.14	- 0.75	0.95	T.	3	17	2	12	nw.	U. S. Engineer Corps.
Lynd (2).....	Lyon.....	747	10	44.0	.....	83	7	7	28	41	0.65	- 1.56	0.28	T.	5	8	15	8	nw.	Maurice Coleman.
Mankato.....	Blue Earth.....	1,072	12	44.0	.....	83	7	7	28	41	0.65	- 1.56	0.28	T.	5	8	15	8	nw.	A. W. Sheets.
Milaca.....	Millelacs.....	995	15	44.1	- 2.9	87	6	14	27	40	1.03	- 0.97	0.77	1.0	3	8	14	9	nw.	Jacob Rouse.
Milan.....	Chippewa.....	918	18	46.8	- 2.8	83	7	23	28	28	2.05	- 0.53	1.40	T.	8	13	5	13	se.	Sadie H. Blake.
Minneapolis (1).....	Hennepin.....	850	16	45.5	- 1.8	83	7	16	28	.....	2.01	- 0.83	1.65	0.2	7	15	4	12	nw.	C. H. Foss.
Minneapolis (2).....	Hennepin.....	900	19	46.6	- 1.2	87	6	17	28	36	1.31									



TABLE 1.—Climatological data for October, 1909. District No. 5—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.					Precipitation, in inches.				Sky.				Observers.			
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	Prevailing wind direction.	
<b>Minnesota—Cont'd.</b>																				
St. Peter.	Nicollet.	840	16	48.4	- 1.1	86	7	14	27	40	1.85	- 0.79	1.05	T.	3	16	7	8	nw.	Charles C. Cavanaugh.
Sandy Lake Dam.	Aitkin.	1,234	16	43.6	- 0.8	78	7	13	28	39	1.03	- 1.26	0.75	T.	3	16	5	10	nw.	U. S. Engineer Corps.
Shakopee.	Scott.	750	14																	Dr. W. J. Marcey.
State Sanitorium.	Cass.	694	1	43.0		82	7	17	27	29	2.59		1.04	1.0	6	13	2	16	nw.	W. B. Nease.
Stillwater.	Washington.	694	4								2.08		1.02	0.2	4	16	2	13	nw.	Mpls. Gen. Elec. Co.
Taylor's Falls.	Chisago.																			Herman Yost.
Wabasha.	Wabasha.	662	17	50.5		81	7	14	28	34										John Sawyer.
Warroad.	Roseau.			42.0		86	6	11	28	43	0.79		0.50	T.	3	10	3	18	w.	O. H. Orcutt.
West Concord.	Dodge.	1,232	1	46.8		78	7	16	28	33	1.20		0.75	T.	2	14	6	11	nw.	J. A. Brandt.
Willow River.	Pine.	1,046	11	43.2	- 2.3	81	7	11	28	39	1.30	- 2.06	0.65	1.0	7	15	8	8	n.	Taber C. Richmond.
Windom.	Cottonwood.	1,336	3	47.6		84	6	14	28	39	1.48		0.85	T.	3	9	12	10	nw.	H. H. Haight.
Winnebago.	Fairbault.	1,100	10	49.5	- 0.2	84	7	19	13	50	1.69	- 0.93	0.67	T.	4	18	5	8	se.	U. S. Engineer Corps.
Winnibigoshish.	Itasca.	1,300	21	43.4	0.0	82	6	15	28	36	2.32	+ 0.37	0.81	0.5	7	13	2	16	nw.	P. C. Meyers.
Winona.	Winona.	680	14	47.8	+ 0.1	81	7	18	28	29	1.24	+ 0.77	0.34	2.2	6	14	5	12	nw.	W. I. Carpenter.
Worthington.	Nobles.	979	14	45.8	- 2.5	80	5	15	13	42	0.72	- 1.49	0.65	T.	2	18	4	9	s.	W. C. Rowell.
Zumbrota.	Goodhue.	979	14	46.2	- 2.3	81	7	14	28	40	0.99		0.57	T.	3	16	5	10	nw.	
<b>South Dakota.</b>																				
Millbank.	Grant.	1,148	20	44.4	- 3.3	89	6	15	28	47	2.96	+ 1.38	2.10	0.2	4	14	6	11	nw.	T. T. Patridge.
<b>Wisconsin.</b>																				
Antigo.	Langlade.	1,489	14	43.4	- 1.8	75	8	20	19	35	0.49		0.34	0.5	3	15	4	12	w.	E. C. Larzeler.
Barron.	Barron.	1,115	16	43.4	- 2.6	79	7	12	28	38	2.54	- 0.30	1.66	3.5	5	11	12	8	nw.	W. A. Kent.
Beloit.	Rock.	750	19	46.4	- 4.2	74	8	21	28	28	0.65	- 1.58	0.50	0.0	2	10	5	16	w.	Smith Observatory.
Brodhead.	Green.	812	11	47.8	- 4.7	81	8	15	28	41	0.68	- 1.62	0.43	0.0	4	19	9	3	sw.	H. D. Kirkpatrick.
Burnett.	Dodge.	880	5	45.2		78	8	20	28	36	0.63		0.33	T.	3	13	3	15	nw.	Geo. W. Smith.
Delavan.	Walworth.	920	16	46.4	- 1.3	78	7	17	28	46	1.05	- 0.89	0.45	T.	5	15	5	11	nw.	E. S. Austin.
Dodgeville.	Iowa.	1,116	10	47.6	- 3.5	79	7	17	28	32	1.07	- 1.10	0.74	T.	5	16	2	13	se.	Geo. H. Butler.
Downing.	Dunn.	983	6	45.2		85	1	12	27	55	2.94		2.00	2.0	3	7	5	19	se.	E. F. Stoddard.
Eau Claire.	Eau Claire.	800	18	46.3	- 2.4	81	7	10	28	37	2.63	- 0.73	1.33	2.3	6	12	7	12	nw.	R. D. Whitford.
Ellsworth.	Pierce.	1,068	1																	H. G. Woods.
Glidden.	Ashwood.	1,519									3.09		1.44	11.5	6	13	0	18	nw.	George Sell.
Grand Rapids.	Wood.	1,021	10	45.9	- 1.8	82	7	19	19	39	1.16	- 0.88	0.71	T.	4	14	5	12	s.	W. B. Raymond.
Grantsburg.	Burnett.	1,095	18	44.6	- 2.4	83	7	10	28	41	3.03	+ 0.34	1.70	4.0	4	11	8	12	ne.	Theodore Olsen.
Hancock.	Waushara.	1,091	17	44.3	- 4.3	76	8	16	28	33	1.83	- 0.47	0.73	4.0	5	14	6	11	se.	F. B. Hamilton.
Hatfield.	Jackson.	973	1																	W. S. Woods.
Hayward.	Sawyer.	1,197	18	43.6	- 1.5	82	7	10	28	42	3.87	+ 0.62	1.85	3.0	6	12	3	15	nw.	W. E. Swain.
Hillsboro.	Vernon.	1,000	18	42.9	- 5.2	79	7	12	28	42	1.75	- 0.69	0.76	2.0	3	13	11	7	sw.	E. V. Wernick.
Koepenick.	Langlade.	1,683	18	41.0	- 5.0	78	8	17	19	42	1.56	- 1.83	0.54	0.6	7				nw.	E. S. Koepenick.
La Crosse.	La Crosse.	714	37	46.9	- 3.8	79	7	18	28	30	1.30	- 1.12	0.46	1.1	7	11	6	14	s.	U. S. Weather Bureau
Lake Mills.	Jefferson.	897	18	45.4	- 4.5	79	8	18	28	38	0.67	- 1.65	0.28	1.0	5	12	11	8	nw.	S. N. D. Smith.
Lancaster.	Grant.	1,070	19	47.0	- 2.4	80	7	18	28	35	1.03	- 1.14	0.34	T.	5	12	11	8	w.	Edward Pollock.
Long Lake.	Oneida.	1,592	1	41.5		80	7	19	1	46	1.03		0.29	2.6	10	11	5	15	se.	Louie Frank.
Madison.	Dane.	974	31	46.8	- 3.3	77	8	24	28	30	0.91	- 1.46	0.44	0.1	6	9	11	11	s.	U. S. Weather Bureau.
Mather.	Juneau.	962		42.5		80	7	12	19	44	1.26		0.52	T.	4	6	1	24	w.	Frank Evans.
Mauston.	do.	882	13	45.2	- 3.9	77	7	16	28	37	1.35	- 1.34	0.75	2.0	5	12	9	10	se.	E. L. Hitchcock.
Meadow Valley.	do.	974	18	44.4	- 3.7	81	7	14	19	46	1.41	- 1.19	0.65	3.0	5	9	11	11	nw.	C. H. Johnson.
Medford.	Taylor.	1,420	18	43.2	- 2.8	78	7	20	19	40	2.05	- 1.45	1.15	4.0	4	13	7	10	s.	William Zeit.
Merrill.	Lincoln.	1,267	3	45.2		86	8	21	12	52	0.77		0.21	1.0	8	13	13	5	w.	F. M. McElroy.
Minocqua.	Oneida.	1,604	5	44.6		75	7	21	27	30										Charles W. Hooper.
Mondovi.	Buffalo.	738	1	45.9		80	7	15	28	40	1.04		0.50	1.0	6	14	8	9	nw.	Dr. Charles Hebard.
Mount Horeb.	Dane.	1,226	5	45.4		79	8	18	28	33	1.30		0.40	T.	6	17	4	10	nw.	W. M. Lewis.
Muskego.	Grant.	666		43.0		82	8	12	19	45	0.96		0.52	0.5	4	9	13	9	sw.	Henry Eckstein.
Neillsville.	Clark.	996	20	44.9	- 1.9	82	7	18	19	45	1.92	- 0.83	1.08	1.0	4	8	0	23	nw.	William Heaslett.
New Richmond.	St. Croix.	990	4	46.2		82	7	15	28	36	1.91		1.10	T.	4	13	10	8	nw.	F. R. Van Meter.
Oceola.	Polk.	806	18	44.8	- 2.0	83	7	12	28	42	2.20	+ 0.17	1.65	3.5	3	11	12	8	w.	C. W. Staples.
Portage.	Columbia.	809	13	45.4	- 4.8	79	8	19	28	34	0.86	- 1.50	0.46	2.0	4	15	9	7	nw.	James Clear.
Prairie du Chien.	Crawford.	690	22	49.0	- 3.3	83	8	21	19	35	1.39	- 1.03	0.44	T.	6	13	3	15	nw.	John Ducharme.
Prentice.	Price.	1,551	11	41.9	- 2.6	80	7	18	19	45	2.45	- 0.75	0.95	16.0	6	11	2	18	s.	J. G. Lash.
Rhinelander.	Oneida.	1,550	4	43.1		80	7	23	28	43	1.15		0.70	4.5	7	8	7	16	sw.	John Lind.
Sauk City.	Sauk.	758	1	46.7		80	8	14	28	43	0.80		0.80	T.	1	19	7	5	w.	K. Derleth.
Shullsburg.	Lafayette.	1,019	3	46.2		77	7	20	24	33	1.81		0.86	0.0	5	13	7	11	w.	H. B. Chamberlin.
Solon Springs.	Douglas.	1,083	2	42.2		83	7	9	28	44										J. M. Sayles.
Spooner.	Washburn.	1,104	14	44.9	- 0.9	80	7	14	28	36	2.41	- 0.60	1.06	T.	6	15	10	6	sw.	H. A. Broese.
Stanley.	Chippewa.	1,082	5	45.3		82	8	18	28	42	1.77		0.82	3.0	5	13	4	14	nw.	L. E. Scott.
Stevens Point.	Portage.	1,113	16	44.4	- 3.6	79	7	16	19	43	1.56	- 1.12	0.75	2.0	4	10	3	18	nw.	G. E. Culver.
Valley Junction.	Monroe.	930	17	44.0	- 4.5	80	7	14	19	42	1.81	- 1.13	0.91	0.5	6	12	6	13	nw.	F. Muermann.
Viroqua.	Vernon.	1,412	18	46.3	- 2.8	79	7	18	28	30	1.05	- 1.58	0.34	2.0	7	15	5	11	se.	H. E. Rogers.
Vudersare.	Vilas.	1,600	1	40.6		80	6	19	28	41	1.66		0.65	4.0	5	9	11	10	nw.	L. L. Thomas.
Watertown.	Jefferson.	824	17	44.6	- 4.1	77	8	16	28	36	0.63	- 1.38	0.34	T.	4	12	13	6	sw.	Charles J. Salick.
Waukesha (1).	Waukesha.	970	13								0.48	- 1.43	0.23	0.5	5				sw.	A. V. B. Dey.
Waukesha (2).	do.	864	1	46.0	- 4.8	78	8	20	28	43	0.62		0.25	1.0	4	19	17	4	sw.	Carroll College.
Wausau.	Marathon.	1,212	17	45.4	- 0.5	78	7	22	19	36	0.88	- 2.15	0.36	3.0	4	12	8	11	se.	H. A. Beilke.
Weyerhaeuser.	Rusk.	1,297	2	42.8		81	7	11	28	45	1.14		0.37	5.5	6	10	12	9	nw.	Miss Etta Stiles.
Whitehall.	Trempealeau.	675	17	45.4	- 3.9	78	7	14	28	40	1.14	- 1.46	0.63	0.5	6	13	11	7	w.	H. A. Towner.
<b>Iowa.</b>																				
Albia.	Monroe.	959	10																	

TABLE 1—Climatological data for October, 1909. District No. 5—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		
<b>Iowa—Cont'd.</b>																				
Des Moines.	Polk.	861	31	51.4	- 1.1	89	12	20	13	39	2.89	+ 0.21	1.06	T.	7	13	5	13	U. S. Weather Bureau.	
De Soto.	Dallas.	866	8	52.1		95	12	17	13	51	2.14		0.62	T.	16	3	12	sw.	R. D. Minard	
Dows.	Wright.	1,142	8	48.4		88	8	15	13	43	2.13		0.75	0.0	6	18	11	se.	G. R. Flett.	
Dubuque.	Dubuque.	639	35	48.4	- 3.6	79	12	23	28	32	2.03	- 0.65	0.89	0.1	8	14	7	10	U. S. Weather Bureau.	
Earlham.	Madison.		6	52.8		87	3	18	12	38									George Phillips.	
Elkader.	Clayton.	727	27	42.6	- 6.8	86	12	12	28	50	1.46	- 1.18	0.85	0.0	4	11	11	9	Charles Reinecke.	
Elma.	Howard.		79			79	7				1.30		0.50	T.	6	13	12	6	H. A. Moore.	
Estherville.	Emmet.	1,298	12	46.2	- 2.6	84	7	16	28	44	1.47	- 0.70	0.55	0.5	4	22	0	9	A. O. Peterson.	
Fairfield.	Jefferson.		14	50.8	- 1.6	91	12	19	13	47	3.32	+ 0.40	1.33	T.	8	19	3	9	R. M. McKenzie.	
Fayette.	Fayette.	1,003	18	46.7	0.0	81	2	10	28	42	1.05	- 1.60	0.45	T.	7				R. Z. Latimer.	
Forest City.	Winnebago.	1,226	14	47.2	- 2.5	85	4	18	28	52	0.75	- 1.55	0.40	T.	2	20	2	9	J. A. Peters.	
Fort Dodge.	Webster.	1,126	8	49.1	- 3.2	88	2	18	13	51	1.34		0.75	T.	4				J. F. Monk.	
Fort Madison.	Lee.		516	59							3.51	+ 0.89	1.17	T.	6	10	11	10	Miss L. A. McCready.	
Gilman.	Marshall.	1,052	9								3.49		1.68	T.	7				J. L. Wylie.	
Grand Meadow.	Clayton.	1,180	17	46.6	- 2.6	78	7	19	28	34	1.81	- 0.66	0.76	T.	6	10	11	10	F. L. Williams.	
Greene.	Butler.		9	47.9		84		16	28	40	1.70		0.93		6	8	12	11	J. L. Cole.	
Grinnell.	Poweshiek.	1,023	16	51.2	+ 0.5	90	12	16	13	43	3.37	+ 0.90	1.38	T.	6	17	3	11	D. W. Brainard.	
Grundy Center.	Grundy.		976	17	48.2	- 3.6	83	7	17	28	40	1.93	- 0.54	1.27	T.	4				J. B. Calderwood.
Guthrie Center.	Guthrie.	1,077	13	49.9	- 2.5	85	2	16	13	37	2.52	+ 0.25	0.58	T.	10	17	5	9	D. G. Beardsley.	
Hampton.	Franklin.	1,155	18	49.2	- 1.6	89	2	18	13	43	2.64	+ 0.21	1.20	0.0	7	13	11	7	E. C. Grenelle.	
Humboldt.	Humboldt.	1,095	17	49.8	- 0.2	83	2	17	13	36	1.37	- 0.52	0.88		4	22	1	8	Henry S. Wells.	
Independence.	Buchanan.	921	43	47.6	- 1.6	84	2	16	28	40	0.48	- 1.88	0.17	T.	4	21	1	9	George Donohoe.	
Indianola.	Warren.	969	17	52.3	- 1.4	89	2	20	13	37	2.45	+ 0.35	0.88	0.1	8	12	7	12	John L. Tilton.	
Iowa City.	Johnson.	683	49	48.0	- 3.1	84	2	18	13	48	1.59	- 1.19	0.94		4	17	2	12	Arthur G. Smith.	
Iowa Falls.	Hardin.	1,170	15	46.5	- 3.2	83	2	16	28	54	1.82	- 0.33	0.68	T.	6	22	0	9	J. B. Parmelee.	
Jefferson.	Greene.			50.5		89	2	16	13	42	2.33		0.65	T.	5	17	7	7	G. W. Jackson.	
Keokuk.	Lee.	547	37	52.4	- 2.1	88	3	23	13	35	4.48	+ 1.99	1.45	0.5	10	14	9	8	U. S. Weather Bureau.	
Keosauqua.	Van Buren.	644	16	49.3	- 5.5	89	3	20	13	53	2.31	+ 0.47	1.12	T.	8	6	14	11	J. H. Landes.	
Knoxville.	Marion.	920	12	52.2	- 1.5	87	2	20	13	39	2.54	+ 0.12	0.83	T.	6	16	4	11	Casey & Belleville.	
Lacota.	Warren.		9								3.01		1.15	T.	6	12	14	5	J. B. Alter.	
Le Claire.	Scott.	576									2.26	+ 0.37	1.18	T.	5				Miss Margaret T. Disney.	
Marshalltown.	Marshall.	947	16	48.2	- 4.1	89	3	17	13	47	1.97	- 0.41	0.95	T.	6	17	4	10	Rolph B. Reasoner.	
Mason City.	Cerro Gordo.	1,132	11	46.5	- 3.1	80	7	15	28	40	1.55	- 0.57	0.65	T.	6	14	8	9	J. S. Mills.	
Mount Pleasant.	Henry.	729	26	50.9	- 0.6	82	3	20	13	34	2.76	+ 0.88	0.88	T.	5	19	3	9	J. W. Edwards.	
Muscatine.	Muscatine.		49								1.68	- 1.36	0.73	T.	5				William Molis.	
New Hampton.	Chickasaw.	1,169	11	46.3	- 4.5	76	7	17	28	35	1.04	- 1.22	0.66		6	17	5	9	A. F. Kemman.	
Newtown.	Jasper.	944	19	51.2	- 0.6	82	2	20	13	36	1.41	- 1.32	0.60		3	18	3	10	J. P. Beatty.	
Northwood.	Worth.	1,222	12	46.6	- 3.1	78	7	17	28	40	1.57	- 1.03	0.80	T.	4	16	6	9	Charles H. Dwell.	
Olney.	Jones.	760	11	49.0	- 2.2	82	2	19	28	38	1.34	- 1.07	1.16	0.0	5	19	4	8	C. M. Miles.	
Osage.	Mitchell.	1,184	17	48.5	+ 1.1	85	2	16	28	39	2.09	- 0.33	1.29	T.	3	13	5	13	A. D. Bundy.	
Oskaloosa.	Mahaska.	843	24	50.8	- 1.3	85	2	20	13	37	2.78	+ 0.58	1.13		6	18	1	12	Joseph Boyd.	
Ottumwa.	Wapello.	649	14	50.4	- 4.6	86	7	21	13	31									John H. Ver Steeg.	
Pella.	Marion.	877	6	51.0		89	2	11	13	50	2.52		1.14	0.2	5	19	2	10	J. A. Harvey.	
Perry.	Dallas.	975	7	49.8		84	2	17	13	40	2.66		0.84	T.	9	11	9	11	J. S. Smith.	
Plover.	Pocahontas.	1,426	12	48.3	- 2.3	86	7	15	13	45	2.13	- 0.39	1.00	T.	5	18	6	7	F. E. Hronek.	
Pocahontas.	do.		4	47.8		84	7	15	13	43	1.04		0.56	0.2	6	19	4	8	Arthur Betts.	
Ridgeway.	Winnebago.	1,215	10	49.2	- 3.2	87	2	18	28	40	1.50	- 1.67	0.51	T.	7	17	5	9	C. M. Randall.	
Rockwell City.	Calhoun.		12	49.0	- 3.0	80	3	17	13	33	1.85	- 0.56	0.75	0.0	4	21	1	9	E. N. Baily.	
Sac City.	Sac.	1,278	26	49.6	- 0.4	84	2	17	13	33	1.41	- 0.88	0.51	T.	5	16	3	12	R. D. Minard.	
St. Charles.	Madison.	1,070	7	53.0		91	2	20	13	39	4.09		2.33	T.	7	20	4	7	J. T. Parker.	
St. Charles.	Keokuk.	877	12	50.9	- 3.4	85	2	18	13	39	2.58	+ 0.02	0.73		7	8	17	6	C. L. Beswick.	
St. Charles.	Van Buren.		6	49.5		90	2	16	14	48	2.49		0.93	T.	9	16	6	9	S. B. Fracker.	
Storm Lake.	Buena Vista.	1,440	12	50.3	- 2.0	85	2	23	12	36	1.60	- 0.69	0.60	T.	5	20	3	8		
Stuart.	Guthrie.	1,216	10																F. K. Gregg.	
Tipton.	Cedar.	807	10	50.1	- 2.3	83	2	21	13	31	3.18	+ 1.16	1.13		6	21	1	9	I. F. Giger.	
Toledo.	Tama.	856	14	50.2	- 1.9	84	2	17	28	40	3.55	+ 1.51	1.60	T.	3	18	3	10	G. W. Schofield.	
Wapello.	Louisia.	588	10	50.7	- 3.7	81	2	23	13	31	2.40	+ 0.53	0.69		6	19	6	6	Wm. A. Cook.	
Washington.	Washington.	769	27	51.0	- 1.2	84	2	19	13	43	1.78	- 0.36	0.88	T.	7	16	10	5	M. L. Newton.	
Washington.	Black Hawk.	882	25	48.9	- 1.3	84	2	18	28	43	1.42	- 0.83	0.69	T.	6	18	4	9	Samuel F. Folt.	
Washington.	Dallas.	1,039	3	51.3		88	2	18	13	38	2.88		0.78	T.	8	14	9	8	H. S. Hoover.	
Waverly.	Bremser.	948	12	48.7	- 3.3	81	7	17	28	40	1.22	- 1.09	0.59	T.	7	12	7	12	C. D. Carpenter.	
Webster City.	Hamilton.		3	50.6		88	2	16	13	43	1.51		0.90	T.	3	15	7	9	Joseph Dorweiler.	
West Bend.	Palo Alto.	1,197	14	48.5	- 0.4	82	7	16	13	38	1.13	- 0.71	0.52	T.	4	13	6	10	F. P. Butler.	
Whitten.	Hardin.	1,036	10	49.4	- 2.2	84	2	18	28	39	1.28	- 1.04	0.93	T.	3	16	4	11	William Lang.	
Wilton Junction.	Muscatine.	683	13	51.0	- 1.5	81	2	19	13	34	1.97	- 0.11	0.95	T.	4	25	3	3	Robert S. Cooper.	
Winterset.	Madison.	1,129	17	51.0	- 2.3	85	7	20	13	35	2.32	+ 0.08	1.04		8	13	4	12	Orley Reese.	
Zearing.	Story.		4	49.1		88	2	15	12	43	2.16		1.64	T.	4	6	13	10		
<b>Missouri.</b>																				
Darksville.	Randolph.	826	18																W. H. Broadus.	
Gorin.	Scotland.		23								2.69	+ 0.35	0.78	T.	10	17	5	9	J. W. Pulliam.	
Hannibal.	Marion.	534	18	53.4	- 2.5	89	3	24	13	39	4.48	+ 2.84	2.55	T.	12	15	7	9	U. S. Weather Bureau.	
Louisiana.	Pike.	500	31	53.0	- 3.2	90	3	20	13	43	6.69	+ 4.56	2.00	T.	8	17	4	10	J. F. Farrell.	
Mexico.	Audrain.	797	31	54.0	- 2.6	94	2	21	13	56	3.84	+ 1.67	1.52	T.	13	19	5	7	J. F. Llewellyn.	
Steffenville.	Lewis.	576	15	54.4	- 2.6	91	2	24	13	41	3.59	+ 1.65	0.90	T.	9	13	8	10	Frank Hall.	
Sublett.	Adair.	1,000	29																Lewis Spriggs.	
<b>Indiana.</b>																				
Collegeville.	Jasper.			49.3		83	8	22	14	42	2.62		1.30	T.	9	4	11	16	Prof. L. C. Klosterman.	
Knox.	Starke.	716		47.7		75	8	24	14	32	2.61		1.91	1.3	8	16	8	7	W. R. R. Tatman.	
Laporte.	Laporte.	810	4																	



TABLE 1.—Climatological data for October, 1909. District No. 5—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		
Illinois—Cont'd.																			
Colchester	McDonough	694	7																Eli V. Kinsey.
Dakota	Stephenson	929		46.6		76	8†	17	28	33	0.79		0.45	T.	6	16	7	8	Harold Leitzel.
Decatur	Macon	685	17	50.7	- 4.8	83	3	23	13	41	3.59	+ 1.55	1.67	T.	7	20	2	9	Prof. J. H. Coonradt.
Dixon	Lee	725	19	47.6	- 3.9	81	8	21	28	38	2.42	+ 0.45	0.96	0.0	6	20	4	7	Mrs. E. E. Shaw.
Du Quoin	Perry	459	18	57.5	- 0.2	93	3	27	13	41	0.84	- 1.08	0.42	0.0	4	19	10	2	G. H. Knetzger.
Dwight	Livingston	600	15	49.1	- 3.1	82	8	21	28	39	2.38	+ 0.70	1.58	T.	7	11	7	13	Edward O. Welsh.
Galva	Henry	842	17	48.6	- 4.3	82	2†	20	28	39	2.60	+ 0.70	1.17	T.	9	16	6	9	Prof. F. U. White.
Greenville	Bond	635	26	53.7	- 2.7	86	3	27	13	37	4.54	+ 1.88	1.78	0.0	8	12	7	12	M. S. Oudyn.
Griggsville	Pike	650	22	52.6	- 3.2	86	3	23	13	34	4.36	+ 2.13	1.64	T.	8	17	9	5	George F. Kneeland.
Halfway	Williamson	569	13	58.8	- 0.2	90	3	28	13	37	0.86	- 0.98	0.32	0.0	4	21	3	7	E. L. Hearn.
Havana	Mason	475	16	52.2	- 4.7	84	2†	24	13	37	3.13	+ 1.29	0.78	T.	7	16	12	3	F. & C. Borgelt.
Henry	Marshall	500	20	50.0	- 2.5	81	8	21	28	40	3.79	+ 0.48	1.15	T.	8	20	4	7	Dr. F. A. Powell.
Hillsboro	Montgomery	675	14	54.2	- 3.1	90	3	25	13	40	3.79	+ 1.07	1.42	T.	5	14	2	15	Ira L. Woodward.
Joliet	Will	541	17	48.7	- 3.3	80	8	24	14†	36	1.68	- 0.18	1.15	T.	6	18	4	9	F. M. Muhlig.
Kishwaukee	Winnebago	730	19	47.5	- 3.6	82	8	20	28	40	0.84	- 1.78	0.39	T.	5	16	7	8	George Stevens.
Knoxville	Knox	775	19	48.9	- 3.2	81	2†	18	13	40	3.52	+ 1.24	1.50	T.	6	17	5	9	C. N. Butt.
La Grange	Cook	657	16	47.0	- 4.8	79	8	24	14	38	1.24	- 0.24	0.43	T.	4	17	7	7	Prof. F. E. Sanford.
La Harpe	Hancock	698	30	49.4	- 5.0	79	3	20	13	35	3.52	+ 1.02	1.63	T.	8	17	4	10	John S. Campbell.
Lanark	Carroll	883	18	46.6	- 3.5	82	8	13	28	47	1.64	- 0.44	0.84	T.	7	22	4	5	M. N. Wertz.
La Salle	La Salle	536	33	49.4	- 2.5	82	8	24	28	36	1.53	+ 1.05	1.18	T.	7	15	7	9	U. S. Weather Bureau.
Lincoln	Logan	482	20	50.1	- 4.7	82	7†	23	13	43	3.10	+ 1.25	0.98	T.	7				Prof. C. S. Oglebee.
Martinton	Iroquois	633	21	49.4	- 3.1	82	2†	22	14	40	3.35	+ 1.23	1.55	T.	6	14	9	8	Joseph H. Peltier.
Mascoutah	St. Clair	425	18	55.7	- 0.9	90	3	23	13	46	3.22	+ 1.06	1.08	0.0	6	21	4	6	George Henrich.
Minonk	Woodford	745	15	50.0	- 3.8	86	8	20	13†	40	2.43	+ 0.91	1.05	T.	6	16	10	5	O. M. Davison.
Monmouth	Warren	784	16	50.8	- 2.7	86	2	20	13	40	3.77	+ 2.00	1.67	T.	8	19	5	7	Hugh R. Moffet.
Morrison	Whiteside	685	13	48.8	- 4.0	79	2†	18	28	36	2.22	+ 0.25	0.85	T.	7	20	4	7	Harold A. Maxwell.
Morrisonville	Christian	638	9	51.8		87	3	23	13	44	3.37		1.32	0.0	8	21	1	9	J. D. Lewis.
Mount Vernon	Jefferson	511	14	56.1	- 1.8	90	2	23	13	47	1.55	- 0.56	0.62	0.0	6	19	5	7	Theodore P. Stelle.
Oregon	Ogle	702		48.3		80	2†	19	28	36	1.60		0.60	0.0	3	17	4	10	Samuel Ray.
Ottawa	La Salle	500	23	49.8	- 3.2	83	8	23	28	42	1.71	- 0.40	0.61	T.	4	15	0	16	Miss Maud M. Harris.
Pana	Christian	692	22	52.4	- 3.6	83	3	24	13	35	3.20	+ 0.78	1.14	0.0	6	22	3	6	C. W. Sibley.
Peoria	Peoria	609	33	49.8	- 2.2	82	8	22	13	37	3.59	+ 1.02	1.35	T.	10	15	7	9	U. S. Weather Bureau.
Pontiac	Livingston	546	7	50.8		84	8	23	13†	40	2.33		1.00	T.	7	11	5	15	George Butterworth.
Riley	McHenry	956	50	47.1	- 1.6	78	8	17	28	30	0.72	- 1.49	0.26	0.2	7	9	12	10	John West James.
Rockford	Winnebago	763	13	46.7	- 3.4	77	8	20	28	34	0.75	- 1.99	0.33	0.2	5	15	7	9	Hosmer C. Porter.
Rushville	Schuyler	670	8	51.8		86	3	23	13	32	2.92		0.85	T.	7	11	5	15	H. F. Dyson.
St. Charles	Kane	700	12	48.2	- 3.6	81	8	21	14†	42	0.99	- 0.92	0.38	T.	5	17	7	7	Dr. Wm. H. Bishop.
Springfield	Sangamon	644	28	51.8	- 2.8	86	3	26	13	33	2.76	+ 0.16	1.50	T.	9	14	9	8	U. S. Weather Bureau.
Staunton	Macoupin	625		55.8		90	4	24	13	42	3.41		1.60	0.0	4	18	8	5	William F. Schaefer.
Streator	La Salle	626	15	49.8	- 3.8	84	7	22	13	46	2.21	+ 0.76	1.15	T.	7	21	5	5	Edward F. Sweetser.
Sullivan	Moultrie	530	9	51.8		86	8	22	13	42	3.39		1.33	0.0	5	15	8	8	C. A. Corbin.
Sycamore	De Kalb	855	28	46.6	- 3.5	82	8	19	28†	43	1.19	- 1.36	0.70	T.	4	18	3	10	Miss E. J. Davis.
Tilden	Randolph	500	23	56.8	- 0.5	91	3	24	13	42	1.97	- 0.36	0.94	0.0	5	23	2	6	James A. Caldwell.
Tiskilwa	Bureau	798	14	49.4	- 3.0	80	8	20	13†	33	2.56	+ 0.62	0.67	0.0	8	22	2	7	F. I. Smucker.
Walnut	do.	717	17	50.2	- 4.3	82	8	21	28	34	2.09	+ 0.48	1.17	0.3	8	17	5	9	O. C. Nussle.
White Hall	Green	573		51.8		87	3	22	13	40	5.48		2.07	T.	8	18	2	11	Dr. R. A. Pritchett.
Windsor	Shelby	651	10	51.5	- 1.4	88	3	21	13	46	2.76	+ 0.84	0.80	T.	9	15	5	11	Herbert Rose.
Winnebago	Winnebago	900	21	47.3	- 3.8	87	7†	19	28	41	1.11	- 1.09	0.50	T.	6	19	4	8	Frank Osborn.
Yorkville	Kendall	584	21	46.9	- 3.2	80	8	19	14	43	1.41	- 0.90	1.20	T.	4	16	6	9	Herman A. Grimwood.
Zion	Carroll	938	13								2.22	+ 0.21	1.02	T.	7	18	5	8	Robert F. Gillogly.

\* Precipitation included in that of the next measurement.

\*\* Temperature extremes are from observed readings of the dry-bulb; means are computed from observed readings.

† Also on other dates.

‡ Separate dates of fall not recorded.

§ Data are from standard instruments not supplied by the U. S. Weather Bureau.

|| Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

¶ Estimated by observer.

⌘ Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.

\*, †, ‡, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

## MONTHLY WEATHER REVIEW.

OCTOBER, 1909

TABLE 2.—Daily precipitation for October, 1909. District No. 5, Upper Mississippi Valley.

Stations.	River basins.	Day of month																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
North Dakota.																																	
Amenia.....	Red.....								.98	.34	.10	T.									T.	T.	.05	T.									1.42
Bottineau.....	Mouse.....								.32			T.	T.						.06	T.		T.	T.	.05	T.								0.43
Cando.....	Sheyenne.....							.10																									0.10
Crosley.....	Mouse.....											.05							.35														0.49
Devils Lake.....	Sheyenne.....							.13	.01			T.	T.		.01				.02			.01	.02	.01	T.								0.21
Donnybrook.....	Mouse.....								1.10										T.	.10													T.
Dunseith.....	do.....					T.		T.				T.	T.										.10	.20									0.90
Edmore.....	Sheyenne.....							.10	.30						.20																		1.74
Forman.....	do.....							T.	.60	.33	.61	T.				T.			.20														
Grafton.....	Red.....																																
Granville.....	Mouse.....					T.		T.	.46			.02	T.						.05								T.						0.53
Hamilton.....	Pembina.....																																
Hannah.....	do.....								.30														.06										0.36
Hansboro.....	Red.....							T.	.20																								0.20
Hillsboro.....	do.....								.33	.25	.02			T.		.01						.05	.03	.10									0.79
Lakota.....	Sheyenne.....																																
Langdon.....	Pembina.....							T.				T.																					T.
Larimore.....	Red.....																																
Liabon.....	Sheyenne.....								.72	.22	.30		T.						T.	.14			T.	.05		T.							1.43
McKinney.....	Mouse.....							.75				T.	T.																				0.87
Manfred.....	Sheyenne.....							T.	.52			T.				.30					T.	T.		.05									0.45
Mayville.....	Red.....								.45																								
Milnor.....	Sheyenne.....																		.16	.05													1.03
Minot.....	Mouse.....					T.		.82				T.	T.														T.						0.47
Minto.....	Red.....							.33				T.	T.			.02								.12									0.63
Oriska.....	Sheyenne.....								.38	.10																							
Park River.....	Red.....								.30						T.		T.																0.62
Pembina.....	do.....					T.																											
Portal.....	Mouse.....							.69	.44	.69		T.							.10			T.	.06										1.98
Power.....	Sheyenne.....							.41																									0.41
Pratt.....	Mouse.....																																
Towner.....	do.....								.03	.36													.01	.05									0.45
University.....	Red.....										.40	1.18	T.			T.			T.														1.58
Wahpeton.....	do.....												T.			T.																	1.28
Walhalla.....	Pembina.....							.01	T.	.18			T.	T.			T.		.02														0.55
Westhope.....	Mouse.....								.08	.38																							0.27
Willow City.....	do.....								.07	.20																							
Minnesota.																																	
Albert Lea.....	Mississippi.....								.67	.60	T.	T.										T.	T.									T.	1.27
Alexandria.....	do.....								.80	.30	.10	T.										T.	.10	T.									1.30
Angus.....	Red.....							.16	.14							.07	.05					.11	.05										0.58
Bagley.....	do.....																																
Baudette.....	Rainy.....											.85	2.31	.06	.05	.05	T.					.35	.45										4.12
Beardsley.....	Minnesota.....							.15	.70	.92								.03		.17		.02											1.99
Beaulieu.....	Red.....								.04	.59	.04	T.	T.			T.	.10					T.	.26										1.71
Bird Island.....	Minnesota.....																																T.
Caledonia.....	Mississippi.....								.72	.23	.12	T.												.25									75
Campbell.....	Red.....								T.	.22	1.00		T.									.16	.03		.04								1.59
Cass Lake.....	Mississippi.....							.75	.45	.25	.05	T.		.10	.05							.90	T.										2.55
Collegeville.....	do.....																					.06	.03									T.	
Crookston.....	Red.....							.30	.18	.04		T.	T.		T.	.07																	
Detroit.....	do.....								T.	.40	.78	.20	T.			T.	.15																
Farmington.....	Minnesota.....																																
Faribault.....	Mississippi.....								.01	.45	1.22	.09	T.						T.														
Farmington.....	do.....																																
Fergus Falls.....	Red.....								.04	.45	.49	.01	T.			.04																	
Fort Ripley.....	Mississippi.....																																
Fosston.....	Red.....								.20			.13	.18																				
Glencoe.....	Mississippi.....																																
Grand Meadow.....	do.....								.60	T.	.30	T.																					
Hallack.....	Red.....								.62	.40	.07	T.																					
Hallstad.....	do.....																																
Hinckley.....	St. Croix.....								.33	.31	.14								.02	T.													
International Falls.....	Rainy.....																																
Kelliher.....	Red.....																																
Lake Crystal.....	Minnesota.....																																
Leech Lake Dam.....	Mississippi.....																																
Litchfield.....	do.....																																
Little Falls.....	do.....																																
Long Prairie.....	do.....																																
Lynd(2).....	Minnesota.....																																
Mankato.....	Mississippi.....																																
Milaca.....	do.....																																
Milan.....	Mississippi.....																																
Minneapolis(1).....	do.....																																
Minneapolis(2).....	Mississippi.....																																
Montevideo.....	do.....																																
Moorhead.....	Minnesota.....																												</				



Stations.	River basins.	Day of month.																																Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
Minnesota—Cont'd.																																			
Warroad.....	Rainy.....										.26	T.									.50	T.	.03										0.79		
West Concord.....	Mississippi.....										.75	.45	T.																				1.20		
Willow River.....	St. Croix.....									.65	.33	.05	.09								.02	.65											1.30		
Windom.....	Des Moines.....									.85	.40	T.																					1.48		
Winnabago   .....	Minnesota.....									.35	.57	.67	T.	T.	T.						T.			.23									1.69		
Winnibigoshish.....	Mississippi.....									.35	.36	.08	.01		.03	T.					.81	.68	T.		.10								2.32		
Winona.....	do.....				T.					.26	.29	.34	.29	T.							.05	.01			T.						T.		1.24		
Worthington   .....	Des Moines.....									.65	.07	T.									T.				T.								0.72		
Zumbrota.....	Mississippi.....								T.	.57	.27	.15	T.		T.																		0.99		
South Dakota.																																			
Milbank.....	Minnesota.....									.45	.10		T.							T.		.23	T.		.18								2		
Wisconsin.																																			
Antigo.....	Wisconsin.....										.34	T.	.05			T.						T.						T.					10	0.49	
Barron.....	Chippewa.....									.41	.66	.05	.21			T.						T.	.21										T.	2.54	
Beloit.....	Park.....									*	.50	.15										T.												0.65	
Brodhead.....	do.....										.43	.14										.09	.02											0.68	
Burnett.....	do.....										.33	*	.10			T.						*	.20			T.								0.63	
Delavan.....	do.....									.16	.18	T.	T.	T.								.24		.02										45	0.05
Dodgeville.....	do.....									.01	.74	.17	T.									.14	.01											1.07	
Downing.....	Chippewa.....									T.	2.00	.90	.04	T.																			T.	2.94	
Eau Claire.....	do.....																																		

TABLE 2.—Daily precipitation for October, 1909. District No. 5—Continued.

Stations.	River basins.	Day of month.																														Total.		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		31	
Iowa—Cont'd.																																		
Grinnell	Iowa								T.	1.38	.08	T.									.06		.53	.32									1.00	3.37
Grundy Center	Cedar								1.27		.12	T.									T.		.28	T.									.26	1.93
Guthrie Center	Raccoon								.14	.58	.51	.04		.03							.11		.26	.39					.01				.45	2.52
Hampton	Cedar								.15	.70	.25										.01	.10	.23										1.20	2.64
Humboldt	Des Moines								.88	.26	.05													.18									1.37	
Independence	Wapsipinicon									.16		.08											.17	.07									0.48	
Indianola	Des Moines							T.	.88	.12	T.	.07		.01							.04		.70	.41							.22	2.45		
Iowa City	Iowa									.31	.10	T.						T.				.24		.94								T.	1.59	
Iowa Falls	do							T.	.33	.68	.28	T.	T.								T.	.03	.26								.20	1.82		
Jefferson	Raccoon							.35	.65												T.		.48	.40					T.			.45	2.33	
Keokuk	Mississippi							.09	.15	.14	.06	T.	.04	T.				.63				.90	.86	.16								1.45	4.26	
Keosauqua	Des Moines							.14	.06	.18	.18	T.	T.					T.	.18		.27	.18		1.12	T.							.21	2.31	
Knoxville	do							T.	.83	.11	.03										T.		.72	.53					T.			.30	2.54	
Lacona	do								1.15	.18		.10											.60	.50							.18	3.01		
Le Claire	Mississippi								.00	.18	.04	T.								T.		.15	.89	T.						T.		2.26		
Marshalltown	Iowa								.28	.93	.09	T.		T.								.07		.57	.01							.09	1.97	
Mason City	Cedar							.65	.37	.30	T.												.06										.09	1.55
Mt. Pleasant	Skunk								.60	.05	T.								T.			.53	.88									.67	2.76	
Muscataine	Mississippi									.17	.14	.03	T.									.61	.73						T.			1.68		
New Hampton	Wapsipinicon							T.	.66	.02	.18											T.	.06	.02									1.04	
Newton	Skunk							T.				.10	T.										.33	.48								.07	1.57	
Northwood	Cedar							T.	.80	.60	.10	T.										.02	.16									.44	2.90	
Olin	Wapsipinicon								.04	.06	.06																						1.34	
Osage	Cedar							T.	1.29		.36																						2.78	
Oskaloosa	Des Moines					T.			1.13	.13												.10	.70	.45					T.		T.	.27	2.78	
Pella	do							T.	1.14	.08	T.	T.	T.									T.	.65	.55								.37	2.78	
Perry	Raccoon							.27	.50	.10	.06	T.						.05				.04	* .84						T.			.80	2.66	
Plover	Des Moines								.40	.47	.03												.23	.12									1.00	2.13
Pocahontas	do							.03	.56			T.	.02										.10	.12									21	1.04
Ridgeway	Mississippi							T.	.51	.13	.18	.01										.12		.04									51	1.50
Rockwell City	Raccoon								.50	.30	T.												.30	T.									19	1.41
Sac City	do								.51	.41	T.	T.											.06	.24									32	4.09
St. Charles	Des Moines							.42	.33	.17	T.											.06	.48	.55	.25								73	2.58
St. Charles	Skunk							.08	.55	.13	T.											.41	.52	.41									44	2.49
Stockport	do							.14	.17	.25	.02	T.		T.				.13				.05	T.	.43						T.			12	1.60
Storm Lake	Raccoon								T.	T.							T.	.60	.40			.31	*	1.13									.98	3.18
Tipton	Cedar							*	.76													T.	T.										1.60	3.55
Toledo	Iowa							1.15				T.											.62	.69	.41								.45	2.40
Wapello	Iowa								.12	.11	T.	T.						T.				.62	.69	.41									.30	1.78
Washington	Skunk							.03	.05	.18		T.										.24	.54	.44									.72	1.43
Waterloo	Cedar							.02	.43	.06	T.											.04	.16										.46	2.88
Waukegan	Raccoon							.05	.78	.56	T.	.01			T.							.06	.72	.24						T.			.23	1.22
Waverly	Cedar							T.	.59	.02	.08										.05	.03	.22										T.	1.51
Webster City	Des Moines							T.	.90	.24	.37	T.										T.	T.		.24								T.	1.13
West Bend	do								.52	.02	.35											T.	T.		.23								T.	1.28
Whitten	Iowa							T.	.93	T.	.12	T.										T.			.45	.95							.30	2.32
Wilton Junction	Cedar								.04	.33	.03						.09						.12	.25	.16								.20	2.16
Winterset	Des Moines								1.64	.03	T.																						.20	2.16
Zearing	Iowa																																	
Missouri.																																		
Darksville	Chariton																																	
Gorin	Mississippi							.11	.16	.08	.05		.02					.78			.40		.25	.20									.64	2.69
Hannibal	do							.02	.10	.09	.02		.01	.06				2.53	.02		.63		.43	.02									.55	4.48
Louisiana	do								.45	.09	T.		.05					84	1.30		2.00		1.60	.36									6.69	
Mexico	do							*	.07	.03	.01	.01	*	.02	.03	*	1.52	1.13	.01	.35	.40	*	.26										*	3.84
Steffenville	Mississippi							.68	.32	.06	.15		T.	T.				.90	.30		.65		.08										.45	3.59
Sublett	Chariton																																	
Warrenton	Mississippi																																	
Indiana.																																		
Collegeville	Iriquois									.25	.20	.11						.06	.20		.25		.15	.30	.10					T.			2.62	
Knox	Kankakee									.39	.13	T.							.05		.04	.04	.10	.81	.05								2.61	
Laporte	do							.02		.38	.06	T.					T.		.06		.07	.38	.36	.04	.03					T.			1.40	
Plymouth	do									.41	.27	.02							.03		.05	.07	T.	1.39									2.24	
Illinois.																																		
Aledo	Mississippi								.27	.25	.14	T.						.05			.35		.62	.40									15	2.23
Alexander	Illinois								T.	.40	.15			.10	.04			.67	1.60		.37		.22	.02						T.			3.57	
Antioch	do									.26	T.	T.											.35										0.61	
Ashton	Mississippi									.67	.15	T.									.04		.21	.38							T.		1.45	
Astoria	Illinois								.52	.15	T.	T.	T.					.40	.35		.42	.05	.65	.15			T.			.05	T.	2.74		
Aurora	do								T.	.15	.12	T.									T.	.16	T.	.82									1.25	
Beardstown	do																																	
Bement	Mississippi									.04	.01	.02	.06	.11				.48	1.09		.30	.01	.18	.52									2.82	
Benton	do																																	
Bloomington	Illinois	</																																



TABLE 2.—Daily precipitation for October, 1909. District No. 5—Continued.

Stations	River basins.	Day of month.																														Total.		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		31	
Illinois—Cont'd.																																		
Loami.....	Illinois.....									T.	.70	T.		.17	.05			.75	1.70		.30		T.	.16					T.				3.83	
Martinton.....	do.....									.37	.03	T.						.25			.85		1.55	.62								.30	3.35	
Mascoutah.....	Mississippi.....									T.			.03		.20			.46	1.08		.83			.62									3.22	
Minonk.....	Illinois.....									T.	.43	.08	T.		T.			.36			.18		.33	1.05							T.		2.43	
Monmouth.....	Mississippi.....									.82	.12	.08						.39			.41		.97	.70				T.		T.	.28	3.77		
Morrison.....	do.....									.05	.85	.25	T.					T.			.14	T.	.36	.45					T.		.12	2.22		
Morrisonville.....	Illinois.....										.30	.05		T.	.01			.87	1.32		.25	.01		.56									3.57	
Mt. Vernon.....	Mississippi.....										.12			.20				.30	.62	.08		.23											1.55	
Oregon.....	do.....										.60	.15									T.			.25								T.	1.00	
Ottawa.....	Illinois.....										.41		T.									.11	.58	.61									3.20	
Pana.....	Mississippi.....										.10	T.		.03	T.			.99	1.14	T.	.46		.80	.55									3.59	
Peoria.....	Illinois.....								.23		.62	.05	T.	.01				.74	.02		.17		.30	1.06				T.		T.	.40	2.33		
Pontiac.....	do.....										.09	.03	T.					.60			.28	.03	.30	.26									0.75	
Riley.....	Mississippi.....			T.							.18	.05	.03								.16	.03	.01	.14									1.25	
Rockford.....	do.....										.20	.33	.02	T.								.06		.14									13	
Rushville.....	Illinois.....							T.	.65		.36	T.						.85			.41		.46	.06							T.		0.99	
St. Charles.....	do.....			T.							.19	.05	T.								.14	T.	.23	.38									0.82	
Springfield.....	Illinois.....			T.					T.	.58	.05		.11	T.		T.		1.50	.02		.20		.19	.03									15	
Staunton.....	Mississippi.....										.38							1.00	1.60		.43												3.41	
Streator.....	Illinois.....										.43	.04	T.						.28		.15			.01									2.21	
Sullivan.....	Mississippi.....										.12	T.		T.				.71	1.33		.40		.83	T.									3.39	
Sycamore.....	do.....										.30	.07	T.								.40	.12		.70									1.19	
Tilden.....	do.....											.01									.94			.03									1.97	
Tiskilwa.....	Illinois.....	T.									.61	.13	T.					.07			.11		.33	.67					.04			.60	2.56	
Walnut.....	Mississippi.....									.06	.66	.06	.04								.01		.54	.63						T.			.09	2.09
Warsaw.....	do.....									.37		.17						.72			.85												.25	3.72
White Hall.....	Illinois.....								.19	.17	T.			.62	.02			.93	1.51		2.07			.57									5.48	
Windsor.....	Mississippi.....			T.							.04	.03	.02	.03	T.			.73	.73		.35	.03		.80									2.76	
Winnebago.....	do.....										.50	.15	T.								.08	T.	.15	.13						T.			.07	1.11
Yorkville.....	Illinois.....										.10		T.								.01		10	1.20									1.41	
Zion.....	Mississippi.....									.32	1.02	.08	T.								.08		.30	.38									.04	2.22

TABLE 3.—Maximum and minimum temperatures at selected stations, October, 1909. District No. 5, Upper Mississippi Valley.

Date.	North Dakota.										Minnesota.																	
	Bottineau, N.D.		Devils Lake.		Labon, N.D.		Minot, N.D.		Fembla, N.D.		Collegeville.		Crookston, N.D.		Grand Meadow.		Montevideo, N.D.		Moorhead.		New Ulm, N.D.		Pine River Dam.		St. Paul.		Winnibigoshish.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	67	44	67	50	78	35	69	43	69	39	70	43	73	48	75	37	80	44	75	48	77	41	72	32	72	43	72	36
2...	70	30	70	38	77	34	75	35	71	34	69	42	70	41	83	52	79	45	70	42	77	47	68	41	70	54	66	41
3...	75	32	72	39	78	35	78	35	68	36	69	40	68	41	76	41	75	44	74	40	75	50	68	37	71	50	69	37
4...	81	48	77	47	78	34	86	40	67	34	70	44	73	40	75	48	76	45	76	44	76	45	72	35	71	50	72	38
5...	84	41	87	53	88	38	80	45	74	35	72	47	80	47	78	48	82	48	82	52	77	45	76	40	73	48	76	46
6...	85	48	87	56	90	39	86	48	81	38	76	52	85	55	83	49	87	53	89	58	80	48	82	50	79	52	82	52
7...	62	45	74	49	87	58	56	48	80	44	80	56	84	58	77	57	85	55	86	59	78	54	83	56	82	56	82	56
8...	54	40	55	41	59	49	56	38	83	46	75	57	54	53	79	55	62	55	60	48	51	76	54	75	60	72	55	55
9...	57	26	51	30	49	39	60	22	82	52	63	48	51	43	67	54	60	47	50	44	71	32	62	50	62	55	56	48
10...	48	32	53	28	57	36	55	24	76	50	56	43	53	38	58	45	54	45	53	40	62	43	57	41	56	41	53	39
11...	32	20	34	21	38	30	30	23	72	49	48	28	34	28	50	32	39	33	40	27	40	36	46	28	42	28	42	29
12...	32	15	31	20	33	22	30	20	67	40	33	20	33	24	33	25	30	25	32	24	30	26	34	24	31	25	32	24
13...	39	12	38	15	41	14	40	10	59	34	37	21	40	23	39	20	43	20	41	21	35	20	36	26	38	28	34	28
14...	47	19	37	20	38	20	56	19	50	32	39	23	36	28	44	22	54	21	35	24	43	22	38	30	38	28	36	33
15...	44	21	44	21	54	22	51	23	40	38	41	31	40	30	49	28	50	31	45	29	51	27	36	28	41	35	36	32
16...	48	24	44	29	48	26	49	25	36	22	43	23	47	36	50	26	51	33	46	31	48	30	44	34	44	34	40	34
17...	35	26	37	31	39	31	40	28	40	20	47	31	43	29	45	28	40	32	44	32	50	28	43	35	42	34	43	29
18...	46	20	46	22	49	30	45	20	38	26	45	26	47	28	49	30	43	23	48	28	46	29	44	36	44	34	44	25
19...	54	27	54	30	56	26	55	23	36	22	45	25	49	27	55	25	50	24	50	27	53	23	46	25	47	29	41	33
20...	44	35	46	37	55	24	45	30	38	28	47	29	48	35	50	32	52	40	48	42	54	25	44	28	47	36	43	37
21...	40	33	40	33	48	39	55	30	34	24	45	37	42	37	53	41	44	35	45	37	53	29	45	36	47	42	42	36
22...	38	30	37	32	39	28	60	24	40	20	41	35	43	34	48	31	47	35	40	36	48	32	46	34	46	41	41	37
23...	40	30	36	32	40	33	47	26	36	22	45	32	42	34	45	35	55	30	40	34	45	30	43	35	44	37	44	34
24...	42	31	48	33	52	32	56	41	33	17	48	29	44	38	47	26	62	32	48	34	52	28	47	24	46	33	45	32
25...	59	22	61	29	64	30	62	33	28	18	55	31	55	27	58	31	56	39	60	27	60	34	53	33	51	39	49	37
26...	44	22	44	26	48	35	51	28	32	10	52	32	43	36	52	31	52	31	46	30	52	34	46	28	49	38	47	34
27...	36	10	32	9	35	20	40	23	30	12	42	22	32	15	43	25	39	28	34	18	41	28	39	23	39	30	35	22
28...	47	30	43	21	47	12	52	23	33	16	40	19	42	23	45	15	47	17	44	17	51	17	40	10	41	24	38	15
29...	52	31	51	27	60	25	58	23	28	10	61	30	52	28	66	25	52	33	58	34	68	30	46	33	64	36	55	32
30...	50	22	50	28	54	30	51	25	32	8	64	41	51	32	72	48	70	40	56	33	74	38	54	38	68	52	52	35
31...	55	23	51	25	60	25	61	24	36	13	58	34	50	32	65	40	50	40	52	30	56	45	56	30	55	46	55	32
Mns	51.8	28.0	51.6	31.4	56.1	30.7	56.0	29.0	51.3	28.4	54.1	34.5	51.8	35.1	58.4	35.8	57.0	36.2	53.7	35.2	58.3	35.1	53.0	34.0	54.0	39.9	51.5	35.4

Date.	Wisconsin.										Iowa.																	
	Delavan.		Eau Claire.		La Crosse.		Madison.		Mauston.		Spoonerville.		Wausau.		Algona.		Cedar Rapids, N.D.		Charles City.		Davenport.		Des Moines.		Dubuque.		Keokuk.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	72	40	72	35	71	41	66	44	68	31	69	36	66	29	74	41	76	42	74	38	73	45	76	42	73	41	75	42
2...	71	45	71	46	74	48	72	50	69	43	70	43	61	38	80	48	84	42	82	48	82	53	89	50	79	50	84	49
3...	68	49	74	43	70	46	67	48	66	40	68	37	68	38	74	53	77	49	74	51	76	54	86	55	73	52	88	62
4...	68	40	73	41	72	42	67	44	68	38	70	34	70	37	72	46	74	50	72	45	73	51	77	53	71	46	77	53
5...	68	37	72	40	71	42	66	47	68	46	71	43	71	37	73	49	74	46	72	44	71	47	76	50	70	43	74	48
6...	73	37	75	43	73	47	70	43	72	40	75	51	73	43	76	50	76	47	76	48	76	47	81	50	73	46	77	48
7...	78	46	81	46	79	51	76	46	77	52	80	55	78	48	81	54	82	49	82	53	80	51	85	56	78	53	82	53
8...	78	50	76	53	79	57	77	51	77	45	74	59	78	51	76	58	79	55	76	58	81	54	79	59	77	56	83	57
9...	75	52	72	52	65	56	73	55	70	45	73	54	75	53	60	53	64	59	60	56	68	60	63	53	67	59	66	60
10...	66	46	60	52	59	49	58	43	60	48	59	50	72	50	58	43	53	50	57	45	60	45	53	46	60	45	61	45
11...	47	34	53	30	48	28	46	30	48	34	51	27	68	32	45	28	45	44	45	30	50	33	46	32	48	34	48	36
12...	34	28	34	26	33	26	31	28	38	27	31	24	34	26	31	24	32	30	30	27	33	27	36	24	34	29	39	28
13...	42	26	40	29	42	30	41	28	40	29	38	29	34	29	40	15	44	21	40	21	41	23	42	20	42	25	37	23
14...	50	24	42	29	41	28	43	27	40	28	44	28	40	29	48	23	50	22	44	25	53	29	53	27	48	27	56	27
15...	40	27	40	35	42	35	40	33	40	32	40	32	42	32	56	29	55	28	52	31	55	32	61	33	44	36	58	34
16...	52	27	46	31	48	30	46	32	47	30	43	30	43	31	53	27	53											



TABLE 3.—Maximum and minimum temperatures at selected stations, October, 1909. District No. 5—Continued.

Date.	Hannibal, Mo.		Laporte, Ind.		Illinois.													
					Calro.		Greenville.		La Salle.		Mt. Vernon, Ill.		Peoria.		Springfield.		Winnebago.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1.....	74	38	65	37	72	51	72	48	72	40	74	42	73	40	73	45	71	36
2.....	85	46	75	39	76	52	79	49	77	46	90	43	81	44	81	48	79	45
3.....	89	59	74	50	88	56	86	49	76	53	86	51	78	52	86	60	73	52
4.....	79	56	69	43	87	61	80	56	71	47	81	55	75	52	76	53	69	46
5.....	77	52	70	42	80	59	75	50	69	45	80	52	73	46	72	47	70	43
6.....	77	51	73	41	76	53	76	48	73	38	81	69	75	43	74	45	78	46
7.....	80	52	74	40	80	51	81	51	80	44	85	62	80	47	79	48	80	39
8.....	83	58	80	44	82	57	82	53	82	51	89	58	82	53	81	51	78	38
9.....	69	33	78	50	74	64	71	60	74	58	78	51	70	59	71	60	80	40
10.....	53	46	65	45	66	53	61	48	62	46	74	46	60	45	61	47	60	45
11.....	49	34	48	36	62	41	52	37	49	33	58	43	51	32	50	35	48	26
12.....	41	27	40	28	48	34	42	31	34	30	42	30	35	27	38	29	36	28
13.....	45	24	45	24	62	33	55	27	42	23	64	23	40	22	45	26	42	25
14.....	38	27	51	23	57	46	49	31	54	27	52	36	53	22	52	30	50	21
15.....	62	34	47	30	68	43	60	36	50	35	60	36	55	31	57	38	42	29
16.....	60	35	51	34	71	42	63	35	52	32	67	37	54	32	56	37	48	29
17.....	50	43	51	30	79	57	54	43	51	35	64	42	48	34	46	42	52	29
18.....	49	38	50	37	70	48	51	44	50	31	59	47	52	33	49	37	50	32
19.....	54	36	55	31	62	46	55	38	54	27	59	49	55	28	55	32	55	25
20.....	55	44	58	32	67	53	58	45	51	36	63	48	52	43	54	44	53	33
21.....	73	49	65	41	78	61	69	52	68	51	75	49	69	48	71	49	60	41
22.....	71	42	51	40	80	57	74	47	53	38	86	42	51	35	65	45	53	32
23.....	45	39	44	34	70	45	54	41	46	38	50	43	46	36	47	38	42	36
24.....	52	30	49	31	53	40	50	36	46	31	48	31	48	27	48	33	48	26
25.....	63	43	53	29	62	38	61	35	56	35	65	35	57	38	61	37	56	36
26.....	67	41	52	29	70	43	67	40	62	40	72	36	64	38	67	42	61	35
27.....	58	36	52	37	60	47	58	40	53	32	69	41	56	34	56	38	49	30
28.....	50	33	46	30	60	41	52	33	46	24	55	34	45	23	45	30	46	19
29.....	71	40	43	25	68	40	62	35	58	32	77	32	60	34	62	33	56	28
30.....	76	55	70	39	72	46	71	47	72	46	80	50	74	44	71	43	74	42
31.....	76	60	75	45	75	55	75	48	76	53	78	45	76	54	76	51	75	50
Means.....	64.2	42.6	58.7	36.0	70.2	48.8	64.4	43.0	60.0	38.7	69.2	43.0	60.9	38.6	62.0	41.7	59.2	35.4

Climatological Data for October, 1909.  
DISTRICT No. 6, MISSOURI VALLEY.

J. WARREN SMITH, District Editor.

GENERAL CLIMATOLOGICAL CONDITIONS.

The mean temperature during October was generally below the normal in the lower Missouri Valley, and above the normal in the central and western parts of this district. The precipitation was deficient in nearly all parts of the district.

The temperature reached 101° in Nebraska and over 90° in all of the States except Wyoming and Montana. The minimum was zero in Nebraska and was below 10° in all of the States except Iowa, Kansas, and Missouri.

The first killing frost of the season in southeastern South Dakota, southern and eastern Nebraska, western Iowa, and most of Missouri and Kansas, occurred on the 11th to 13th.

A trace of snow fell in most central and eastern parts of the Missouri Valley on the 11th or 12th. The section director for Iowa reports that the date is much earlier than usual for the first snowfall. In the mountain sections the snowfall during the month was from 2 inches to over 1 foot. The greatest fall reported was 17.5 inches at Corona, Grand County, Colo., at an elevation of 11,660 feet above sea level. At Lake Hotel in the Yellowstone National Park the snowfall was 15.5 inches.

The prevailing wind was from the southeast in Iowa, south in Kansas, southwest in Missouri, west in Colorado, Wyoming, and Montana, and from the northwest in North Dakota, South Dakota, and Nebraska. The average sunshine was less than the normal for the month in the southeastern part of this district, but there was abundant sunshine in the northwestern States.

The month was unusually mild and pleasant in Wyoming, and there was an absence of unusually high or low temperatures. While the temperature averaged above the normal, the extreme maximum was as low as any extreme maximum for October for the last ten years. There was no severe storm during the month. The precipitation was the lowest, with the exception of 1907, of any October during the last nineteen years. There was a high percentage of sunshine during the month. Thunderstorms occurred over much of the State on the 4th, 5th, 6th, and 7th. The highest temperature was 85° at Moorcroft on the 2d and Phillips on the 3d, and the lowest was 4° at Fountain Hotel, Yellowstone National Park, on the 8th. The greatest monthly rainfall was 1.59 inches, while at several stations there was no precipitation, or only a trace. The greatest rainfall in any twenty-four consecutive hours was 0.80 inch. The greatest snowfall was 15.5 inches at Lake Hotel, Yellowstone National Park.

The month was notable in Montana for continuous mild temperature and deficient precipitation. Minimum temperatures below zero and maximum above 90° occur occasionally during October, but for this month the lowest recorded in this State was 2° and the highest 89°. The precipitation was deficient in all parts of the State. In some localities it was the driest October for several years, but for the State as a whole, it was not so dry as the corresponding month in 1907. In the mountain districts within the Beaverhead, Madison, Gallatin, and upper Yellowstone basins the total precipitation was generally in excess of 1 inch. The averages for the various sub-drainage basins were approximately as follows: Marias, 0.14 inch; Milk River, 0.31 inch; Sun River, 0.22 inch; Musselshell, 0.59 inch; Jefferson, 0.63 inch; Madison, 1.16 inches; Gallatin, 1.00 inch; Big Horn, 0.14 inch; Tongue River, trace; Powder River, trace; Yellowstone, 0.59 inch. Owing to the mild temperatures a smaller percentage of the precipitation than usual, even at comparatively high elevations, fell as snow, and the month closed with little snow visible below 6,000 feet altitude. The greatest monthly precipitation was 1.71 inches, and the

greatest amount in twenty-four hours was 1 inch. The greatest monthly snowfall was 7.2 inches.

Nearly normal weather conditions obtained throughout that portion of North Dakota that is in this district. The temperature averaged less than 1° below the normal. The highest temperature was 91° and the lowest 4°. The precipitation was unevenly distributed both geographically and throughout the month. The average rainfall was about one-fourth inch below the normal. The greatest monthly rainfall was 1.23 inches, and the greatest fall in twenty-four hours was 1.14 inches. The average depth of snowfall during the month was nearly one inch. The greatest snowfall was 4.2 inches. No severe storms or winds of a damaging character were reported during the month. There was an abundance of sunshine.

In South Dakota the weather was, on the whole, favorable for all outdoor work. In a number of southern counties the first severe or killing frost did not occur until the early part of the second decade, too late to cause any damage. The mean temperature for the State was about the normal. The maximum temperature was 95° and the minimum 7°. The average precipitation for the several valleys was: Missouri, 1.29 inches; James, 1.74 inches; Big Sioux, 1.67 inches; Cheyenne, 0.85 inch. It was practically normal for the State. The greatest monthly precipitation was 3.24 inches, and the greatest amount in twenty-four hours, 2.10 inches. Only a trace of rain fell at Ashcroft in the Little Missouri River Valley. About the usual number of thunderstorms occurred, principally in the first decade. Light snow, melting as it fell or soon after, occurred at a number of places, but principally in the more elevated portions of the Black Hills. The average hourly velocity of the wind, determined from the records of the regular Weather Bureau stations, was 10.2 miles per hour, and the average total movement for the month was 7,632 miles. There was somewhat more than the usual amount of sunshine in the western counties; elsewhere it was about the normal.

The month was somewhat cooler and much drier than the normal in Minnesota. The sunshine was slightly below the normal.

The month was warm and dry in Colorado. The average temperature for that part of the State that is in District No. 6 was 48.5°, or 1.4° above the normal. The first week was unusually warm, but from the 7th to the 9th the temperature fell rapidly and killing frost was general on the morning of the 9th. The highest temperature was 91° and the lowest 4°. The precipitation in this part of the district was 0.50 inch and was 0.56 inch below the normal. Practically all the precipitation occurred between the 3d and 9th; no rain of importance fell from the 10th to the 30th. The heaviest precipitation was 1.35 inches, and the greatest fall in twenty-four hours, 1.35 inches. The greatest snowfall was 17.5 inches. For the State as a whole the sunshine was about normal. The relative humidity was practically normal in the northeastern counties and above the normal in the Arkansas Valley. The wind movement was slightly above the normal in all localities.

In Nebraska the mean temperature was near the normal, while the precipitation was about half an inch below the normal. The deficiency in rainfall was slightly more than half an inch in the Niobrara, Missouri, Loup, and Blue River drainage areas while it was decidedly less than half an inch in the upper Platte and Republican river valleys. Most of the rainfall occurred in the rain period extending from the 7th to 11th and on the 31st. The highest temperature was 101° at Beaver City on the 2d; the lowest was 0° at Gordon and Hillside, on the 12th. The greatest precipitation was 4.02 inches, and the greatest



fall in twenty-four hours was 3.06 inches. The first killing frost of the season in the southern and eastern counties occurred from the 11th to 13th. The average wind velocity, as determined from the records of four regular Weather Bureau stations in the State, was 10 miles per hour, which is about 0.3 mile above the average velocity for the past fifteen years. The greatest snowfall was 2.5 inches. About the average number of clear and cloudy days was experienced.

The mean temperature for the month was slightly below the normal in Iowa, while the precipitation was generally below the normal over the northern two-thirds of the State, and above the normal over the southern third. The highest temperature was 92° and the lowest 10°. During the past nineteen years there have been five cooler Octobers in this State, but there are no records of as low temperatures during the first fifteen days of October as was registered this month on the 12th and 13th. The rainfall was general on the 8th to 12th, and the 20th to 23d. Light snow flurries occurred on the 11th and 12th, which is much earlier than usual for the first snow of the season. The heaviest precipitation was 4.70 inches, and the greatest amount in twenty-four hours was 1.98 inches.

The month in Kansas was cool and dry, with the percentage of sunshine below the normal. The highest temperature reported was 96° and the lowest 14°. The minimum temperatures occurred on the 12th and the first killing frost of the season was reported from all stations on that date. The precipitation was generally below the normal in all the river valleys. The heaviest monthly precipitation was 3.49 inches, and the greatest amount in twenty-four hours 2.47 inches. A trace of snow occurred over much of the State on the 11th.

In Missouri the mean temperature was generally below the normal in the northern counties and above in the southern. During the first decade the daily temperature averaged about 8° above the normal, but during the second decade it was about 10° below the normal. The highest temperature was 96° and the lowest 21°. The first general killing frosts occurred on the mornings of the 12th and 13th. The precipitation was above the normal over most of the Osage, Grand, and Chariton watersheds and below the normal in most of the Meramec and Gasconade watersheds. The greatest monthly precipitation was 5.53 inches at Avalon, Livingston County, and the greatest fall in twenty-four hours was 2.57 inches. Snow flurries occurred quite generally on the 11th.

#### RIVERS.

On account of the light precipitation most of the rivers in the district were somewhat lower than the usual October stage. At St. Louis the Mississippi River averaged 6.0 feet, while the average for October for the past eighteen years is 7.7 feet.

#### MISCELLANEOUS.

The weather conditions were favorable for agricultural, engineering, and general outdoor work, except that in parts of the James and Big Sioux river valleys in South Dakota, rain in the latter part of the first decade temporarily interrupted some field and construction work. In the valleys in Montana the precipitation nearly all fell as rain, and its distribution throughout the month was favorable for agricultural interests, especially dry farming, since it fell in such light amounts as to be fully absorbed and stored in the soil.

The sharp fall of temperature at the beginning of the second decade caused some damage to unharvested agricultural products, especially in Montana, North Dakota, and Iowa. In Iowa the ground was frozen to such an extent that potatoes remaining in the ground were considerably damaged. Over the southern portion of the State thousands of bushels of apples were frozen on the trees. While corn was ripe, it was not dry enough to withstand such a severe freeze as occurred without injury to its germinating qualities. Although the precipitation was generally below the normal it was sufficient for fall plowing and the germination of winter grains.

Prairie fires occurred in several counties in South Dakota and caused some damage. Forest fires passed over a considerable area of the Black Hills Forest Reserve in this State.

During the irrigation season at the Garden City Reclamation Project in Kansas, which closed September 30, the pumping plant was operated ninety-six days and seven hours. The amount of water pumped during this time was 7,555 acre-feet, while there were used from the Arkansas River 11,000 acre-feet during the irrigation season.

At the Nebraska-Wyoming North Platte Project the total amount of water turned into the irrigation canal during the season was 230,382 acre-feet. Of this 141,666 acre-feet were used in irrigation, 5,683 acre-feet wasted at the end of the canal into the reservoir, and 83,033 acre-feet lost by seepage and evaporation in the main canal and lateral systems. The seepage and evaporation, therefore, amounts to 36 per cent of the quantity of water entering the canal.

At the Montana-North Dakota lower Yellowstone Project water was turned out of the main canal October 11, practically closing the irrigation season. At the South Dakota Belle Fourche Project the delivery of water for irrigation was discontinued the first of the month. At the Wyoming Shoshone Project the farmers have been engaged in fall irrigating and the canals have been delivering about as much water as during the summer months.

A class in irrigating in the University of Missouri constructed a weir on Grindstone Creek, 1½ miles southeast of Columbia, during the month. The weir will be used to measure the flow of water in the creek.

TABLE 1.—Climatological data for October, 1909. District No. 6, Missouri Valley.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.	Prevailing wind direction.
Wyoming.																				
Arapahoe	Fremont		4								0.24		0.11		4	6	19	6	sw.	David Malloy.
Baroum	Johnson	5,500	4								0.99		0.50	4.0	3	17	5	5	w.	Thos. Freeguard.
Basin	Big Horn	3,856	10	46.6	- 0.4	76	31	20	31	46	0.00	- 0.34	0.00	0.0	0	24	4	3	nw.	O. J. Robertson.
Bennett	Carbon										0.15		0.11		2	24	6	1	w.	Chas. C. Young.
Cheyenne	Laramie	6,088	38	46.4	+ 1.3	77	2	19	9	43	0.28	- 0.44	0.19	2.0	5	13	14	4	nw.	U. S. Weather Bureau.
Cheyenne Exp. Farm	do.	6,000	3								0.05		0.05	0.5	1	21	8	2		Irrigation Inves. Office.
Chugwater	do.	5,282	8	44.7		80	11	10	23	37	0.54		0.14	1.5	5	24	7	0	w.	George Milne.
Clark	Big Horn	4,320	4	49.6		73	4	26	18	34	0.39		0.14	T.	4	12	14	5	n.	Chas. A. C. Snow.
Crystal Lake Reservoir	Laramie	6,900	3	46.3		75	2	15	18	47	0.25		0.16	T.	3	14	10	6	nw.	L. E. Jensen.
Douglas	Converse	4,793	3	51.4		82	2	22	9	39	0.75		0.45	T.	5					Henry C. Miller.
Dubois	Fremont	6,909	3	42.4		71	2	14	23	50	0.27		0.16	T.	2	18	13	0	w.	Dr. F. H. Welty.
Eaton's Ranch	Sheridan	4,600	4	49.4		80	28	27	11	39	0.14		0.14	0.0	1	27	3	0	n.	F. A. Eaton.
Echeta	Crook										T.		T.	T.	0	26	3	2	n.	M. R. Hunter.
Elk Mountain	Carbon		4								0.38		0.13	2.5	5					Wm. Richardson.
Encampment	do.	7,322	4	46.4		73	2	13	9	41	0.01		0.01	T.	1	18	9	2	sw.	U. S. Forest Service.
Erway	Natrona			47.0		74	3	16	8	38	0.77		0.37	0.0	3	21	6	4	sw.	Frank Jameson.
Fillmore	Albany	7,527	3								0.33		0.22	0.5	3					Jas. Dougherty.
Fort Laramie	Laramie	4,270	32								0.09		0.09		1	20	9	2		John Hunton.
Gillette	Crook	4,546	3	49.8		81	5	19	18	40	0.09		0.09		1	20	9	2		S. D. Perry.
Granite Canyon	Laramie	7,337	4	45.0		72	4	17	22	48	0.28		0.10	1.0	6	22	6	3	w.	Wm. Boyce.
Hunter's Station	Johnson	8,000	3	39.8		70	3	10	12	43	0.45		0.16	5.0	5	24	4	3	w.	August Hettinger.
Hyattville	Big Horn	6,632	10	48.2	+ 0.8	78	2	23	9	44			0.11	1.3	2	21	4	6	w.	Wm. Booth.
Independence	Natrona			46.2		76	1	14	22	56	0.15		0.11	1.3	2	21	4	6	sw.	Henry D. Schoonmaker.
Kaycee	Johnson		8								0.28		0.28	T.	1	25	2	4	sw.	A. Grigg.
Kirtley	Converse		5	47.1		78	31	13	12	46	0.28		0.28	T.	1	25	2	4	sw.	D. M. Zum Brunnen.
Kirwin	Big Horn	9,187	1	37.1		59	2	6	8	32	0.62		0.50	1.2	3	19	11	1	w.	C. L. Tewksbury.
Knowles	Crook										0.65		0.33	0.0	2					G. A. Knowles.
Lander	Fremont	5,372	17	45.0	+ 2.9	78	3	16	8	49	0.55	- 0.50	0.31	4.5	4	9	20	2	sw.	U. S. Weather Bureau.
Laramie	Albany	7,188	18	44.4	+ 2.6	75	3	15	9	45	0.50	- 0.26	0.16	0.9	5	15	16	0	nw.	University of Wyoming.
Leo	do.	6,878	8	43.8	+ 1.7	75	3	10	8	48	0.13	- 0.55	0.10	0.8	2	11	7	9	w.	C. A. Cowdin.
Lolabama Ranch	Big Horn	7,052	6	40.4		65	27	13	8	49	0.71		0.33	3.0	4	15	14	2	w.	Mary E. Painter.
Levell	do.		4	46.9		76	4	19	18	51	0.20		0.13	0.0	2	23	4	4	n.	R. Fred Harrison.
Lusk	Converse	5,007	19	44.9	+ 0.3	80	1	14	11	49	0.00	- 0.61	0.00	0.0	0					D. E. Goddard.
Luther	Laramie										0.24		0.08	0.5	3	24	6	1	nw.	Henry D. Colburn.
Manville	Converse	5,050									0.00		0.00	0.0	0	22	0	9		C. A. Sherman.
Moorecroft	Crook	4,211	6	44.6		85	2	9	10	52	0.00		0.00	0.0	0	22	0	9		Jas. K. Somers.
Moore	Albany	6,000	8	47.9	+ 1.7	75	2	15	12	34	1.22	+ 0.33	1.16	1.0	5	5	10	6	w.	Edwin Moore.
Newcastle	Weston	4,319	2								0.70	- 0.08	0.38	1.9	2	23	7	1	w.	Dr. S. W. Johnson.
Pathfinder	Natrona	5,735	3	47.6	+ 0.7	81	6	22	25	43	0.70	- 0.08	0.38	1.9	2	23	7	1	w.	U. S. Reclamation Service.
Phillips	Laramie	4,900	6	48.9		85	3	18	14	44	0.06		0.06	0.6	1	18	10	3	nw.	Mrs. Arthur Rugg.
Pine Bluff	do.	5,038	9								0.04		0.04	0.0	1	13	17	1	w.	C. W. Johnson.
Powell	Big Horn	4,376	2	46.8		74	3	20	12	44	0.04		0.04	0.0	1	13	17	1	w.	U. S. Reclamation Service.
Riverton	Fremont		2	46.8		80	4	11	23	51	0.07		0.07	T.	1	18	1	1	nw.	Robert P. Quest.
Saratoga	Carbon	7,300	12	45.0	+ 1.5	75	2	13	9	49	0.26	- 0.79	0.16	0.2	3	17	10	4	ne.	Supt. S. & E. R. R.
Sheridan (1)	Sheridan	3,790	14	45.6	+ 0.8	79	28	18	12	53	0.36	- 0.43	0.22	T.	5	13	11	7	nw.	U. S. Weather Bureau.
Sheridan (2)	do.	3,738	14	46.6	+ 1.8	78	5	18	25	54	0.18	- 0.61	0.10	0.0	2	14	15	2	nw.	Geo. Brundage.
Shoshone Dam	Big Horn	5,385	3	50.2		78	4	19	8	47	0.36		0.12	1.3	5	19	10	2	w.	U. S. Reclamation Service.
Soldiers' Home	do.	4,635	17	49.6	+ 2.8	78	28	20	18	46	0.14	- 0.29	0.12	0.2	2	12	14	5	nw.	Geo. L. Courtney.
South Pass City	Johnson			38.8		68	2	6	31	45	0.40		0.21	T.	3	20	10	1	sw.	John Sherlock.
Thermopolis	Fremont			47.2		78	2	16	30	53	0.44		0.34	0.5	3	25	4	2	sw.	A. L. Duhig.
Upton	do.	4,350	7																	G. E. McPherran.
Valley	Weston										0.45		0.16	5.0	5	20	9	2	w.	Jas. L. McLaughlin.
Verona	Big Horn	6,500									0.56		0.35	1.6	2	6	23	2	se.	A. A. Roode.
Wiley	Sheridan			47.2		75	4	20	8	39	0.27		0.15	T.	2	22	6	3	w.	C. D. Marshall.
Wynote	Big Horn	5,375	2	47.2		75	4	20	8	39	0.27		0.15	T.	2	22	6	3	w.	C. D. Marshall.
Yellowstone Park	Laramie	4,207	2	48.6		81	5	15	12	53	T.	- 0.80	T.	0.0	0	18	10	3	nw.	U. S. Reclamation Service.
(1) Fountain	National Park	6,200	22	42.2	+ 0.7	66	3	16	8	38	0.34		0.11	0.2	7	6	14	11	sw.	U. S. Weather Bureau.
(2) Grand Canon	do.			36.4		65	2	4	8	44	0.94		0.32	3.5	6	18	5	8	sw.	U. S. Army.
(3) Lake Hotel	do.			33.6		61	3	10	22	39	0.55		0.20	4.5	4	14	4	13	ne.	Do.
(4) Norris Geyser	do.	7,733	5	35.8		62	2	5	8	43	1.33		0.40	15.5	8	18	1	12	sw.	Do.
(5) Riverside	do.	7,525	5	36.0		66	2	10	8	47	0.58		0.30	5.7	5	12	5	14	w.	Do.
(6) Soda Butte	do.	6,500	3	35.8		69	3	10	4	53	0.83		0.16	1.6	8	14	12	5	sw.	Do.
(7) Sylvan Pass	do.	7,000	4	38.2		67	2	8	8	49	0.84		0.40		6	14	11	6	sw.	Do.
(8) Thumb	do.	7,000	2	38.2		62	2	15	21	41	1.59		0.80	11.0	4	17	8	6	sw.	Do.
(9) Tower Falls	do.			37.2		63	2	9	8	39	1.44		0.55	13.0	5	18	12	1	n.	Do.
(10) Upper Basin	do.			40.0		68	3	9	8	49	0.32		0.10		8	11	12	4	sw.	Do.
(10) Upper Basin	do.	7,395	5	35.4				9	8		0.70		0.30	7.0	3	23	0	8	sw.	Do.
Montana.																				
Adams	Dawson		1	44.7		81	4	6	12	38	0.02		0.02	0.0	1	12	10	9	nw.	W. B. Ennis.
Adel	Cascade	5,200	11	44.6		73	3	21	30	43	0.69	- 0.41	0.23	0.0	5	14	5			



TABLE 1.—Climatological data for October, 1909. District No. 6—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.	Prevailing wind direction.
Montana—Cont'd.																				
Cut Bank.	Teton	3,700	11	45.2 <sup>b</sup>	+ 3.7	74 <sup>b</sup>	3	14 <sup>b</sup>	18	42 <sup>b</sup>	T.	- 0.89	T.	0.0	0	17 <sup>b</sup>	7	5	w.	Chas. N. Thomas.
Decker.	Rosebud	3,400	5	48.4		75	23	23	9	45	0.00		0.00	0.0	0				Adam Anderson.	
Deep Creek.	Broadwater	4,200									0.45		0.20	0.0	4	18	4	9	w.	Mrs. D. W. Maryott.
Delphine.	Meagher.	5,000									0.12		0.05	1.3	4	13	16	2	w.	Tracy L. Holliday.
Denton.	Fergus.		2	44.5 <sup>a</sup>		74 <sup>a</sup>	3	10 <sup>a</sup>	31	41 <sup>a</sup>	0.32		0.32	0.0	1	25	2	4	nw.	R. M. Chamberlain.
Dillon.	Beaver Head.	5,147	12	51.5	+ 5.1	80	14 <sup>b</sup>	23	21 <sup>b</sup>	51	0.57	- 0.29	0.23	T.	7	16	8	7	sw.	J. E. Monroe.
Dirty Creek.	Meagher.	6,000									0.26		0.15	0.6	7	20	7	4	w.	Lewis Cameron.
Dry Creek.	Broadwater.	5,500									1.05		0.27	2.5	12	12	5	14	nw.	J. C. Stuart.
Dry Wolf Camp.	Cascade.	6,000									0.69		0.41	2.6	5	16	11	4	sw.	Mrs. R. J. Eveleth.
East Gallatin River.	Gallatin.	6,300									1.45		0.42	2.5	7	20	6	5	w.	John Eberhart.
Ekalaka.	Custer.		8	47.2		82	4 <sup>b</sup>	4	12	40						22	4	3	n.	W. Freese.
Elkhorn.	Jefferson.	6,576									0.26		0.10	T.	5	11	17	3	sw.	J. W. Skelton.
Evans.	Cascade.	4,900																	H. Thraeber.	
Fallon.	Teton.	2,208	5	46.2		85	3	2	12	77	T.		T.	0.0	0	20	6	5	w.	Mrs. A. C. Gifford.
Family.	Custer.	3,950	1																U. S. Reclamation Service	
Fish Creek.	Silver Bow.	8,500	1	38.8		56	27	10	9	27	1.09		0.52	7.2	4	7 <sup>a</sup>	8	15	w.	O. B. Tilton.
Fish Tail Creek.	Carbon.	5,000									1.29		0.88	T.	5	16	9	6	w.	O. E. Haskin.
Flathead Creek.	Gallatin.	6,000									1.71		0.39	3.5	6	4	23	4	nw.	L. G. Brown.
Forsyth.	Rosebud.	2,514	3	49.7		88	29	13	12	52	T.		T.	0.0	0	11 <sup>a</sup>	19	0	sw.	Thos. M. Patterson, jr.
Fort Benton.	Chouteau.	2,630	30	49.6	+ 3.1	80	4	30	27	40	0.35	- 0.26	0.35	0.0	1	21	10	0	sw.	River Observer.
Fort Shaw.	Cascade.	3,500	21	46.6	+ 0.2	75	3	18	18	48	0.25	- 0.29	0.21	T.	2	8	19	4	sw.	U. S. Reclamation Service
Fort W. H. Harrison.	Lewis & Clark.	4,004	6	45.6		73	3	23	31	40						19	12	0	sw.	Post Hospital.
Foster.	Yellowstone.		1	47.2		82	5	13	12	58	0.14		0.12	0.0	3	18	8	5	nw.	E. K. Bowman.
Garnett.	Fergus.	5,500	1					20	31		0.99		0.89		2	22	6	3	w.	J. E. Scully.
Glendive.	Dawson.	2,069	20	44.4 <sup>b</sup>	- 3.3	89	1	4 <sup>a</sup>	12	44 <sup>a</sup>	T.	- 0.89	T.	0.0	0	18	6	7	nw.	W. B. Walker.
Goldbutte.	Chouteau.		4	43.6		73	3	15	30	46	0.43		0.30	T.	3	11	17	3	sw.	J. T. Berthelote.
Graham.	Custer.		4																J. S. Rue.	
Grayling.	Gallatin.	6,700	6	36.7 <sup>b</sup>		65 <sup>b</sup>	2	11 <sup>b</sup>	8	49 <sup>b</sup>	0.61		0.42	T.	3	11 <sup>b</sup>	9	9	sw.	P. Kerzenmacher.
Great Falls.	Cascade.	3,350	18	48.9	+ 0.3	78	9	26	18	42	0.48	- 0.09	0.22	0.0	3	18	12	1	sw.	S. H. Bauman.
Half Moon Pass.	Fergus.	6,500									1.19		0.80	2.5	4	2	26	3	w.	Thos. Stigen.
Half Way House.	Broadwater.	6,000									1.10		0.22	0.7	11	18	11	2	ne.	Gordon Deans.
Harlowton.	Meagher.	4,165	2	45.5 <sup>b</sup>		81 <sup>b</sup>	3	14 <sup>b</sup>	12	53 <sup>b</sup>	0.00		0.00	0.0	0	5 <sup>b</sup>	9	11	w.	Jos. Muir.
Hassel.	Broadwater.	5,200									0.14		0.08	0.0	3	0	31	0	nw.	E. C. Albrecht.
Havre.	Chouteau.	2,505	29	45.6	+ 2.0	77	3	16	12	47	0.25	- 0.25	0.13	0.1	5	11	12	8	e.	U. S. Weather Bureau.
Helena.	Lewis & Clark.	4,110	30	46.2	+ 2.2	72	3	25	31	34	0.27	- 0.55	0.14	T.	4	10	14	7	sw.	U. S. Weather Bureau.
Highwood.	Chouteau.										0.31		0.21	0.0	2	19	7	5	ne.	W. S. McCord.
Home Park.	Madison.										0.41		0.36	0.0	2	19	8	4	w.	H. L. Miller.
Huntley.	Yellowstone.	3,014	4	48.0		78	4 <sup>b</sup>	17	12	47	0.50		0.50	0.0	1	14	14	3	e.	U. S. Reclamation Service
Jones Canyon.	Gallatin.	6,800									1.08		0.45	0.0	10				w.	Jas. McCune.
Jordan.	Dawson.		5																W. S. Henderson.	
Kleinsmith Creek.	Jefferson.	6,000									0.91		0.33	0.0	3	7	24	0	w.	Mrs. E. W. Mills.
Lewistown.	Fergus.	4,010	12	45.6	- 0.6	76	1	21	11 <sup>b</sup>	40						9	16	0		W. W. Watson.
Livingston.	Park.	4,488	11	49.4	+ 0.7	76	28	24	18	42	0.79	- 0.20	0.47	T.	6	10	15	6	sw.	Lewis Terwilliger.
Lodge Pole Creek.	Sweetgrass.	5,700									0.65		0.30	0.0	4	13	9	9	w.	F. G. White.
Lone Tree.	Chouteau.		5	48.8		78	3	22	12 <sup>b</sup>	41	0.20		0.10	0.0	2	24	4	3	w.	E. Wilson.
Lost Horse Creek.	Meagher.	5,800									0.37		0.20	1.4	8	14	15	2	w.	C. M. Mason.
Lubec.	Teton.	5,046	1																U. S. Reclamation Service	
Malta.	Valley.	2,240	3	43.7		77	5	10	12	39	0.60		0.50	0.0	3	23	6	2	sw.	F. E. Parent.
Meadow Creek.	Madison.	6,700									0.16		0.09	0.0	2	12	17	2	s.	E. J. Parkinson.
Melstone.	Fergus.	2,903																	Leon B. Clark.	
Mildred.	Custer.										0.00		0.00	0.0	0	28	3	0	w.	U. S. Weather Bureau.
Miles City.	do.	2,371	15	49.4	+ 2.9	82	4	14	12	41	0.12	- 0.64	0.12	0.0	1	14	13	4	ne.	W. H. Edick.
Mill Creek.	Park.	5,500									0.44		0.25	0.0	5	14	12	5	sw.	Clyde Grove.
Moore.	Fergus.										0.94		0.46	0.0	3	23	3	5	w.	Emery Mudd.
Mudd Creek.	Deer Lodge.																		Madison River Power Co	
Norris.	Madison.	4,845	3	47.8		69	16 <sup>b</sup>	24	10	37	0.70		0.30	0.0	4	14	3	14	s.	F. L. Bryant.
Nye.	Sweetgrass.		1	42.2		69	4	4	17	58	0.87		0.51	1.2	7	15	10	6	sw.	Robt. Olsen.
Olsen Creek.	Jefferson.	6,345									0.70		0.27	0.0	6	22	5	4	w.	Mrs. Theola Kiermeyer.
Pipestone Pass.	Jefferson.	7,000									1.06		0.36	1.5	6	11	15	5	nw.	H. M. Cosier.
Poplar.	Valley.	2,020	25	43.0	- 1.6	86	4	4	12	46	0.15	- 0.57	0.15	0.0	1	21	6	4	w.	W. H. Campbell.
Raymond.	Teton.	4,260	2	46.1		86	1	12	10	44	0.10		0.10	0.0	1	8	18	5	w.	E. A. Reber.
Rebers Ranch.	Carbon.	6,000																	I. A. Draper.	
Red Lodge.	do.	5,548	9	43.0		69	4 <sup>b</sup>	18	8	38	1.19		0.60	3.0	4	6	19	6	se.	Henry Cramer.
Reese Creek.	Gallatin.	5,000									1.37		0.54	3.0	4	14	4	13		F. B. Elmer.
Renova.	Jefferson.	4,383	10	47.0		70	13 <sup>b</sup>	20	21	43	0.45	- 0.40	0.20	0.0	6	10	14	7	sw.	Milo Brooks.
Rimini.	Lewis & Clark.	7,900	1	40.8		59	4 <sup>b</sup>	25	8 <sup>b</sup>	19	0.38		0.16	1.5	3	20	5	6	nw.	H. W. Scherfenberg.
Ryegate.	Yellowstone.	3,640	1								0.42		0.22	0.0	2	17	0	14	w.	Mrs. H. L. Miller.
Sedan.	Gallatin.	3,155	2	42.6		64	22 <sup>b</sup>	17	8 <sup>b</sup>	42	0.75		0.18	1.2	9	6	22	3	w.	Jas. Woosley.
Springbrook.	Dawson.		8								0.29		0.16	0.6	2	19	5	7	s.	Jas. W. Hargrove.
Stearns.	Lewis & Clark.	4,500																	U. S. Reclamation Service	
Tokna.	Dawson.	2,050	4	44.0		86	5	6	12	55	T.		T.	0.0	0	19</				

TABLE 1.—Climatological data for October, 1909. District No. 6—Continued.

Stations	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.					Precipitation, in inches.				Sky.				Prevailing wind direction.	Unservers.				
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days .01 inch or more.	Number of clear days.			Number of partly cloudy days.	Number of cloudy days.		
North Dakota—Cont'd.																						
Fullerton.	Dickey	1,439	10	43.6		89	31	10	28	52	0.44		0.20	2.0	3	14	7	10	nw.	F. O. Alin.		
Haley	Bowman	1,440	1	44.0		85	4	10	12	45	1.01		1.00	0.0	3				nw.	Myra Hart.		
Hettinger	Adams	2,253	2	54.2		78	17	18	12	37	0.10		0.10	T.	1	0	29	2		F. E. Ellickson.		
Howard	Williams	2,275	41	41.2		85	4	4	13	43	0.56		0.45	4.2	3	9	12	10	se.	C. B. Ambaugh.		
Jamestown	Stutsman	1,390	21	41.0	- 5.1	88	5	5	13	61	0.83	- 0.14	0.50	0.0	3	8	17	6	ne.	L. B. Baldwin.		
Kulm	Lamoure	1,966	4																	J. F. Brenckle.		
Lamotte	Kidder	1	1	41.4		90	5	6	13	42	0.57		0.37	2.0	2	20	4	7	nw.	E. V. Virgin.		
Lamoure	Lamoure	1,307	2										0.47	1.5	3					A. H. Ormsby.		
Manfred	Wells			42.6		89	31	9	12	41	0.87		0.52	3.0	3	18	4	9	nw.	S. P. Crane.		
Marmarth	Bowman		1										0.06	0.0	2	16	11	4	nw.	H. H. McCumber.		
Marstonmoor	Stutsman		1										0.23	2.0	2	12	13	6	nw.	M. Dwyer.		
Medina	do	1,796	4																	J. W. Hesser.		
Medora	Billings	2,225	12	45.8	+ 0.7	86	5	14	12	52	0.25	- 0.31	0.25	T.	1	17	11	3	e.	J. P. Kidder.		
Melville	Foster	1,590	11			82	4	11	13	47	0.42	- 1.13	0.30	3.0	2				nw.	O. H. Opland.		
Mott	Hettinger		2	41.8		81	5	12	40	1.23			1.14	1.0	2	10	13	8	se.	C. J. Hoof.		
Napoleon	Logan	1,955	17	42.4	- 1.4	91	5	4	13	46	0.70	- 0.26	0.60	1.0	2	19	3	9	nw.	W. C. McKenzie.		
New England	Hettinger	2,400	13	44.2	+ 0.2	81	17	18	20	45	0.67	+ 0.48	0.65	0.2	2				nw.	J. Christiansen.		
New Salem	Morton	2,163	2	43.8		88	4	8	13	42	0.70		0.45	0.0	5	14	13	4	nw.	J. E. Goforth.		
Orange	Adams		2	44.2		87	6	13	13	54	0.50		0.38	0.0	2	16	11	4	nw.	T. A. McCann.		
Palermo	do	2,200	5																	B. C. Smith.		
Steele	Kidder	1,857	13	43.4	- 0.1	86	6	13	7	40	0.69	- 0.01	0.69	T.	1				nw.	W. F. Adams.		
Swartwood	Bowman		1										0.61	T.	3	18	9	4	nw.	U. S. Weather Bureau.		
Washburn	McLean	1,731	5	44.4		89	5	10	13	39	0.27		0.11	T.	3	18	10	3	nw.	W. R. Peterson.		
Williston	Williams	1,875	29	41.8		86	4	6	13	48	0.21		0.07	1.2	7	6	17	8	nw.	U. S. Weather Bureau.		
Wishek	McIntosh	2,010	4	42.9		81	3	11	14	50	0.40		0.40	T.	1	23	6	2	nw.	H. E. Timms.		
South Dakota.																						
Aberdeen	Brown	1,300	20	45.4	- 0.2	91	6	10	13	46	0.85	- 0.98	0.40	T.	3	20	3	8	s.	D. G. Gallett.		
Academy	Charles Mix		21	51.6	+ 0.1	94	5	14	13	42	1.12	- 0.49	0.36	T.	5	18	8	5	nw.	I. T. Lothrop.		
Alexandria	Hanson	1,352	21	49.6	- 0.2	88	5	15	13	38	1.87	- 0.05		T.	4	13	14	4	se.	W. S. Hill.		
Andover	Day	1,476		46.4		90	5	10	13	51	2.44		1.10	T.	3	15	5	11	nw.	E. L. Stone.		
Ardmore	Fall River	3,557	1										0.38	0.0	1	14	14	3		C. G. Hurlbut.		
Armour	Douglas	1,521	16	50.6	- 0.5	95	5	19	12	44	1.85	- 0.19	0.87	T.	6	20	7	4	nw.	J. S. Bean.		
Ashcroft	Harding	3,192	18	46.8	+ 0.8	82	6			44	T.	- 0.62	T.	0.0	0					Thos. Ashcroft.		
Belle Fourche	Butte	3,000	2	48.2		84	3	9	12	50	0.41		0.38	0.0	2	7	13	11	nw.	W. H. McKinley.		
Bowdle	Edmunds	1,995	15	45.8	- 0.5	86	6	7	13	41				T.	5	11	6	14		C. T. Smithers.		
Brookings	Brookings	1,636	22	46.2	+ 0.1	85	5	10	13	34	1.71	+ 0.34	1.08	T.	5	11	6	14		Prof. C. Willis.		
Burke	Gregory		2	50.5		93	5	11	13	42	1.27		0.62	0.0	4	21	3	7	nw.	James Connell.		
Canton	Lincoln	1,248	14	48.1	- 2.0	84	5	10	13	35	1.31	- 0.59	0.49	T.	5	21	1	9	se.	John H. Holsey.		
Cascade Springs	Fall River	3,422	2	49.0		84	4	15	12	57	1.10		1.10	0.0	1	24	3	4	nw.	Fred Norenberg.		
Castlewood	Hamlin	1,685	4	44.8		85	5	12	13	36	1.55		0.70	T.	6	10	2	19	nw.	M. N. Bradley.		
Centerville	Turner	1,229	5	53.0		84	6	12	13	43	1.52	- 0.33	0.67	0.2	5				nw.	Frank Williams.		
Chamberlain	Brule	1,363	12	49.9	- 2.1	93	5	16	14	50	1.16	- 0.11	0.76	0.0	2	16	9	6	nw.	G. A. Fry.		
Clark	Clark	1,779	16	44.8	- 3.0	81	6	10	13	38	2.56	+ 1.00	0.95	T.	4	17	7	7	nw.	O. H. La Craft.		
Clear Lake	Deuel	1,500	7																	L. F. Hanly.		
Clifton	Sully																			H. F. Chamberlain.		
Cottonwood	Stanley		1	50.0		92	4	12	12	48	0.26		0.22	0.0	2	23	5	3	nw.	S. W. Sussex.		
Daviston	Perkins		1	45.4		85	6	14	27	58	1.07		0.77	0.0	2	12	11	8	nw.	G. G. Davis.		
Deadwood	Lawrence	4,535	1	46.6		81	4	10	12	47	1.85		0.90	0.2	4	20	6	5		R. E. Grimshaw.		
De Smet	Kingsbury	1,726	18	47.6	+ 0.4	88	5	9	13	39	1.53	- 0.20		T.	4	19	8	4	nw.	J. O. Purinton.		
Dowling	Stanley	2,250	1	50.7		89	4	14	12	38	0.70		0.60	T.	2	19	9	3	nw.	M. P. Dowling.		
Dumont	Lawrence	6,195	1										0.99	1.5	8	19	7	5	sw.	A. B. Wood.		
Elk Point	Union	1,127	11	52.8	- 0.7	90	7	25	13	46	2.15	- 0.16	1.50	T.	3	10	13	8	se.	M. Hoffman, jr.		
Ellingson	Perkins																			R. E. Sheriff.		
Englewood	Lawrence	5,723	1										1.36	4.0	7	11	15	5	nw.	E. E. White.		
Eureka	McPherson	1,884	1	47.0		89	5	10	13	47	0.17		0.17	T.	0	1	16	11	4	nw.	W. D. Griggs.	
Fairfax	Gregory		7	53.0		93	5	25	27	40				T.						J. T. Murphy.		
Farmington	Pennington	3,000	14										1.04	+ 0.30	1.04	0.0	1	20	9	2	se.	A. E. Nicholls.
Faulkton	Faulk	1,595	16	46.0	- 0.7	89	6	9	13	45	0.59	- 0.66	0.25	T.	3	21	4	6	nw.	Miss Belle Talcott.		
Flandreau	Moody	1,565	20	46.6	- 1.5	85	6	12	13	44	1.26	- 0.49	0.88	T.	4	19	5	7	nw.	G. A. Perley.		
Forestburg	Sanborn	1,231	19	48.9	+ 0.2	92	6	12	13	44	1.75	+ 0.15	0.78	T.	5	17	6	8	nw.	M. K. Judy.		
Fort Meade	Meade	3,624	29	47.8	- 0.4	85	3	10	12	49	0.50	- 0.56	0.50	0.0	1	14	10	7	w.	Post Surgeon.		
Frederick	Brown	1,371	3	44.4		90	6	8	13	45	0.45		0.29	1.0	2				nw.	J. E. Jeffers.		
Gannavault	Buffalo		12	49.6	- 0.8	91	5	14	13	39	1.00	- 0.01	0.32	0.0	4	13	13	5	nw.	V. P. Drips.		
Greenmount	Lawrence	6,430	1										1.16	8.5	4	9	16	6	w.	John H. Leitell.		
Greenwood	Charles Mix		15	53.8	+ 1.9	92	5	17	13	39	1.80	- 0.03	0.91	T.	4	15	12	4	nw.	T. C. Williamson.		
Hardy Ranger Station	Lawrence	6,600											1.12	4.7	3	27	1	3	w.	Mrs. Mary E. Seals		
Hermosa	Custer	3,349	4	49.2		86	6	12	11	38	0.59		0.59	0.0	1	26	4	1	nw.	S. M. Booth.		
Highmore	Hyde	1,890	16	48.6	+ 0.5	92	5	10	13	40	1.04	- 0.11	0.34	T.	5	17	9	5	nw.	P. H. Moore.		
Hill City	Pennington	5,061	1										0.85	0.0	1	4	13	14	4	s.	Geo. A. Karr.	
Howard	Miner	1,564	18	46.0	- 1.5	87	6	7	13	38	1.97	+ 0.13	0.72	T.	4	16	8	7	nw.	J. J. Cox.		
Howell																						



TABLE 1.—Climatological data for October, 1909. District No. 6—Continued.

Stations	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.			
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.	Prevailing wind direction.	
South Dakota—Cont'd.																					
Seiby	Walworth		1	47.6 <sup>b</sup>		88 <sup>b</sup>	5	11 <sup>b</sup>	13	39 <sup>b</sup>	0.79		0.72	T.	2	17	7	7	se.	Miss Gertrude Hall.	
Sioux Falls	Minnehaha	1,400	20	48.6	- 0.7	87	5	13	13	39	1.50	- 0.20	0.80	T.	4	15	8	8	nw.	J. H. Bechtold.	
Spearfish	Lawrence	3,647																		O. A. Martin.	
Stephan	Hyde	1,840	5	48.1		92	5	10	13	43	0.69		0.48	T.	4	12	13	6	nw.	Rev. A. Mattingly.	
Tama	Meade		1	46.6 <sup>a</sup>		89 <sup>a</sup>	6	10	12	58 <sup>a</sup>	0.57			T.	4	8	8	15	nw.	J. J. Daily.	
Vale	Butte	2,765	2	48.0		86	4 <sup>t</sup>	12	12	53	1.05		1.01	0.0	2	20	9	2	nw.	G. W. Shaw.	
Van Metre	Lyman																			Thos. H. Hill.	
Vermillion	Clay	1,222	8	51.4		87	5	16	13	40	2.51		0.78	T.	6	17	5	9	nw.	Prof. E. C. Perishe.	
Water's Ranch	Lawrence	4,000	1								0.39		0.39	0.0	1					Geo. Waters.	
Watertown	Codington	1,735	14	45.6 <sup>b</sup>	+ 0.4	86 <sup>c</sup>	5	15	13	34 <sup>c</sup>	1.65	- 0.01	0.92	T.	2	16	5	10	s.	Robert Q. Wood.	
Wentworth	Lake		19	45.7 <sup>a</sup>	- 2.0	85 <sup>a</sup>	5 <sup>t</sup>	11 <sup>a</sup>	13	33 <sup>a</sup>	1.85	+ 0.16	0.62	1.0	6	17	7	7	s.	R. C. Zimmerman.	
Wessington Springs	Jerauld	1,410	14	49.2	+ 0.2	90	5	14	13	39	1.42	+ 0.40	0.54	T.	4	20	4	7	nw.	F. N. Dunham.	
White Lake	Aurora	1,646									1.09		0.57	0.0		14	7	10	nw.	Mrs. G. A. Rogers.	
Yankton	Yankton	1,234	37	50.0	- 0.5	89	5	18	13	33	2.22	+ 0.65	1.53	T.	6	10	12	9	nw.	U.S. Weather Bureau.	
Minnesota.																					
Pipestone	Pipestone	1,710	10	46.8 <sup>a</sup>	+ 1.1	84 <sup>a</sup>	6	11 <sup>a</sup>	13	39 <sup>a</sup>	0.40 <sup>a</sup>	- 1.57	0.21 <sup>a</sup>	T.	2	12 <sup>a</sup>	9 <sup>a</sup>	9 <sup>a</sup>	se.	W. S. Campbell.	
Colorado.																					
Akron	Washington	4,650	7								0.36									Ira M. Barnhouse.	
Alma	Park	10,238	12								1.35		1.35	T.	1	18	9	4	sw.	W. H. Powless.	
Arriba (near)	Lincoln	5,239	3	48.5		83	2	16	27	52	1.35		0.90		7.5	15	12	15	5	sw.	C. S. Graves.
Auldhusat	Teller	8,500									0.33		0.17		1.8	3				sw.	Mrs. Alice A. Auld.
Barker	Boulder	8,000	2	43.2		65	2 <sup>t</sup>	12	9	46	0.25		0.17		1.8	3				sw.	E'n Colo. P. Co.
Boreas	Park	11,489									0.53		0.18		3.8	5	4	19	8	nw.	Frank Soper.
Boulder	Boulder	5,347	13	53.9	+ 1.5	80	2	23	12	40	0.55	- 0.98	0.28	1.0	3	23	7	1	w.	S. A. Giffin.	
Burlington	Kit Carson	4,160	5	53.3		91	3	28	7 <sup>t</sup>	43	1.10		1.00	T.	2	26	1	4	se.	C. Creglow.	
Cassels	Park	8,445									0.10		0.10	T.	1	18	5	8	e.	Harriet M. Cassell.	
Castle Rock	Douglas	6,220	18																	Chas. Hy. Ellis.	
Cheesman	Jefferson	6,890	6	49.8		76	2 <sup>t</sup>	19	9	46	0.41		0.24	2.2	3	22	7	2	sw.	C. L. Adams.	
Cheyenne Wells	Cheyenne	4,279	16	51.0	- 1.1	91	4	23	24	55	1.00	+ 0.13	1.00	3.0	23	5	3	3	sw.	J. B. Robertson.	
Corno	Park	9,785	10								0.15		0.10	T.	2					sw.	Edwin Pike.
Cope	Washington	11	51.3	+ 0.2	88	1	22	24 <sup>t</sup>	55	1.04	- 0.09		0.70	0.0	3	17	10	4	sw.	A. A. Williams.	
Corona	Grand	11,560	2	29.9		56	2	4	10 <sup>t</sup>	24	1.30		0.50	17.5	7					sw.	U. S. Weather Bureau.
Denver	Denver	5,272	37	52.4	+ 1.4	79	5	26	11	45	0.28	- 0.68	0.16	T.	4	17	9	5	sw.	U. S. Weather Bureau.	
Elginwater	Jefferson		1	52.2		80	1 <sup>t</sup>	21	9	52	0.51		0.25	0.0	4	15	13	3	sw.	Dr. J. B. Fish.	
Estes Park Hacienda	Larimer	8,000									0.16				3	14	8	9	w.	Gaylor H. Thompson.	
Fort Collins	do	4,985	29	49.6	+ 1.5	82	2	16	9	50	0.08	- 0.94	0.04	0.0	3	20	10	1	nw.	Colo. Agt. College.	
Fort Morgan	Morgan	4,519	14	50.5	+ 0.9	85	3	22	24 <sup>t</sup>	54	0.70	- 0.20	0.30	0.0	3	13	14	4	sw.	Della M. Scott.	
Frances	Boulder	9,300	4	43.0												7	11	3	w.	D. A. Barry.	
Fry's Ranch	Larimer	7,500		46.8		72	28	15	18	44	0.23		0.07	1.0	5	20	8	3	sw.	Norman W. Fry.	
Georgetown	Clear Creek	8,555	8								0.09		0.04	T.	3	18	9	4	sw.	H. L. Corbett.	
Greeley	Weid.	4,649	18	51.8	+ 2.2	84	3	21	9 <sup>t</sup>	57	0.27	- 0.60	0.23	0.0	3	20	7	4	sw.	Nelson Reynolds.	
Hartsel	Park	7,679									0.01		0.01	0.2	1	21	9	1	nw.	Emily Klatsknecht.	
Hawthorne	Boulder	6,000	1								0.44		0.21	1.0	3	29	1	1		R. L. Chesbro.	
Holyoke (near)	Phillips	2,745	13																	E. E. T. Hazen.	
Idaho Springs	Clear Creek	7,534	9	48.0		73	2	17	9	40	0.18		0.07	1.0	3	1	29	1	e.	J. J. Willis.	
Koota	Weid.	4,966	2																		
Kossler	Boulder	7,720	2																		
La Port	Larimer	5,053	18								0.05	- 1.00	0.05	T.	1					E'n Colo. P. Co.	
Le Roy (near)	Logan	4,380	20	50.4	+ 0.4	85	5	21	18	51	0.56	- 0.42	0.35	0.8	4	13	14	4	se.	P. A. Taft.	
Longmont	Boulder	4,989	7	50.5		87	2	20	9	55	0.22		0.08	0.0	4	25	3	3	sw.	Chas. Ireen.	
Long's Peak (near)	Larimer	8,600	14	43.8	+ 4.8	70	30	16	25	51	0.10	- 1.53	0.10	0.0	1	21	6	4	nw.	Geo. W. Johnson.	
Moraine	do	7,775	19	44.9	+ 2.4	74	3	14	31	51						16	14	1	w.	Enos A. Mills.	
Platte Canyon	Jefferson	5,492	10								0.35		0.23	0.0	1					J. D. Stoad.	
St. Cloud	Larimer	7,750									0.57		0.23	T.	5	13	10	8	nw.	Norman Steele.	
Sedgwick	Sedgwick	3,573	1	49.6		89	5	20	19	54	0.05		0.05	T.	1	17	14	0	nw.	Mrs. Phoebe A. Campton.	
Sill Mine	Clear Creek	11,500									0.85		0.22	6.5	7	20	8	3	w.	Dr. Edwin Lewis.	
Spicer (near)	Larimer	8,700									0.32	- 0.82	0.17	1.5	2					Chas. F. Deinger.	
Waterdale	do	5,206	14																	Frank W. Murphy.	
Westlake	Boulder		1																	P. H. Boothroyd.	
Wray	Yuma	3,512	15	52.2	+ 1.1	88	3 <sup>t</sup>	22	12	54	1.11	+ 0.13	0.56	T.	4	18	12	1	se.	G. E. Richardson.	
Yuma	do	4,138	18								0.76	- 0.26	0.44	0.7	3	18	5	8	nw.	J. C. Tuomey.	
Nebraska.																					
Atinsworth	Brown	2,521	4	49.9		92	5	14	12	47	1.09		0.42	T.	3	7	16	8	sw.	Geo. W. Custer.	
Albion	Boone	1,747																		John M. Cotton.	
Allamore	Boxbutte	3,968	14								0.80	- 0.03	0.30	0.5	3	13	13	5	nw.	F. A. Pittenger.	
Alma	Harlan	1,939	12	53.2	- 1.0	89	2 <sup>t</sup>	21	12	50	1.53	- 0.41	1.08	0.0	4	18	9	4	sw.	Agent, C. B. & Q. R. R.	
Anoka	Boyd		3	48.6		94	5	13	13	47	1.23		0.53	T.	3	13	12	6	nw.	W. A. Sharpack.	
Aradia	Valley	2,186									0.90	- 0.83	0.90	0.0	2	19	5	7	sw.	W. Whitla.	
Ashland	Saunders	1,100	19	53.6	- 1.3	90	3 <sup>t</sup>	24	12 <sup>t</sup>	37	0.98	- 1.20	0.44	T.	6	16	9	6	sw.	J. L. Owen.	
Ashton	Sherman	2,061									1.37	- 1.43	0.67	T.	4	18	8	5	sw.	A. S. von Mansfelde.	
Atkinson	Holt	2,108	4																	Fred Rein.	
Auburn	Nemaha	1,051	17	54.6 <sup>b</sup>	- 1.1	93	4	23	13	44	0.73	- 2.11	0.38	T.	4	16	5	10	sw.	C. J. Wilson.	
Aurora	Hamilton	1,792		53.3	- 0.1	90	2	22	12	40	2.33	- 0.02	1.25	0.0	4	19	0	12	sw.	J. R. Huffman.	
Beatrice	Gage	1,235	18	54.3	- 0.5	87	3 <sup>t</sup>	25	12	42	0.44	- 1.85	0.30	T.	4	18	9	4	sw.	Agent, C. B. & Q. R. R.	
Beaver City	Furnas	2,147	18	55.0	+ 0.6	101	2	19	12	45	1.42	+ 0									

TABLE 1.—Climatological data for October, 1909. District No. 6—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, all or more.	Number of clear days.	Number of partly cloudy days.			Number of cloudy days.
Nebraska—Cont'd.																				
Dawson.	Richardson.	945	13	54.5	- 2.7	92	3	23	13	42	1.08	- 2.04	0.53	T.	5	17	4	10	sw.	Mrs. E. I. Atkinson.
Dubuque.	Pawnee.	1,074									1.30		0.52	T.	5	18	8	5	s.	O. M. Backus.
Duff.	Rock.																			Dewitt Eager.
Edgar.	Clay.	1,722									3.72	+ 1.31	2.25	0.0	4					G. W. Ferree.
Ellis.	Gage.	1,430									0.55		0.55	0.0	1					D. J. Wood.
Elmer.	Buffalo.	2,268									1.35		1.00	0.0	2					E. L. Sutton.
Elm.	Perkins.	3,382																		J. L. Brittain.
Enderslake.	Brown.		1	52.0		88	4	24	12	41	0.50		0.50	0.0	1				nw.	C. D. Langley.
Endicott.	Jefferson.	1,288									0.20		0.10	0.0	2	20	0	11	e.	Agent, C. B. & Q. R. R.
Ewing.	Holt.	1,888	3	49.6		90	6	18	13	45	1.53	- 0.26	0.80	T.	2					G. H. Benson.
Fairbury.	Jefferson.	1,316	14	55.6	+ 0.7	92	3	25	12	43	0.98	- 1.30	0.31	T.	6	17	10	4	nw.	W. F. Cramb.
Farmington.	Fillmore.	1,641	15	53.6	+ 0.8	90	4	21	12	49	1.75	- 1.07	0.98	T.	3	16	4	11	s.	Agent, C. B. & Q. R. R.
Fort Robinson.	Dawes.	3,764	27	47.9	- 0.4	85	5	14	12	32	1.11	- 0.17	1.05	T.	2	18	7	6	sw.	Post Surgeon.
Franklin.	Franklin.	1,820	15	54.6	+ 1.4	93	3	16	12	47	1.75	- 0.03	1.25	0.0	3	21	4	6	s.	D. T. Shoemaker.
Fremont.	Dodge.	1,203	27	52.8	+ 0.3	90	2	20	13	43	0.89	- 1.38	0.46	0.0	5	12	9	10	nw.	Ernest Hahn.
Fullerton.	Nance.	1,629	3	59.4		87	2	20	12	42	2.17		1.28	0.0	3	15	10	6	s.	Dr. F. W. Johnson.
Geneva.	Fillmore.	1,633	17	54.4	+ 0.4	92	3	23	12	42	1.82	- 0.69	1.45	T.	3	18	6	7	se.	F. M. Flory.
Genoa.	Nance.	1,584	34	51.8	+ 1.0	89	3	21	12	40	1.77	+ 0.02	1.32	T.	3	14	14	3	se.	F. W. Parsons.
Gorham.	Sheridan.	3,550	1	46.6		87	4	0	12	54	0.11		0.11	0.0	1	14	16	1	nw.	G. F. Williams.
Gosper.	Gosper.										1.00		0.90	0.0	2	19	6	6	s.	E. H. Stoll.
Gothenburg.	Dawson.	2,557	15	52.4	+ 0.4	92	2	11	12	52	0.50	- 1.07	0.50	0.0	1	20	1	10	nw.	W. J. Bartholomew.
Grand Island.	Hall.	1,860	17	51.8	- 0.7	91	3	20	12	43	1.96	- 0.63	1.10	T.	3	13	7	11	s.	E. A. Barnes.
Grant.	Perkins.	3,405	5	50.2		90	2	9	12	56	0.15		0.15	T.	1	17	12	2	nw.	Cyrus Carver.
Greeley.	Greeley.	2,021	2	51.4		90	3	20	12	46	1.72	- 0.03	1.31	0.3	4	12	14	5	se.	W. E. Morgan.
Guerick.	Webster.	1,646									2.79	+ 0.77	1.15	T.	5	12	7	12	n.	J. S. Marsh.
Halcyon.	Dundy.	3,258																		Agent, C. B. & Q. R. R.
Halmy.	Thomas.	2,695	6	51.8		90	5	13	12	46	0.45		0.45	0.0	1	14	9	8	nw.	U. S. Forest Service.
Hartington.	Cedar.	1,200	18	49.5	- 1.4	89	4	15	13	39	1.00	- 0.84	0.42	0.0	4	12	7	12	nw.	D. E. Ewing.
Harvard.	Clay.	1,812	19	50.6	- 1.3	87	2	19	12	41	3.17	+ 0.84	1.77	T.	4	20	7	4	nw.	Dr. J. T. Fleming.
Hastings.	Adams.	1,932	16	51.0	- 2.0	90	3	21	12	47	1.39	- 0.78	1.25	T.	2	19	2	10	se.	Agent, C. B. & Q. R. R.
Hayes Center.	Hayes.		5	52.0		90	2	14	12	56	0.27	- 1.23	0.25	2.5	2	23	6	2	se.	C. A. Ready.
Hay Springs.	Sheridan.	3,821	22	47.7	+ 0.5	89	5	10	12	50	0.92	- 0.37	0.92	T.	1	11	17	3	nw.	A. Kadlock.
Hebron.	Thayer.	1,458	24																	C. M. Easton.
Hendley.	Furnas.	2,231									1.27		1.05	0.0	2					F. A. Jones.
Holdrege.	Phelps.	2,324	15	52.5	- 0.1	91	3	21	12	45	1.35	- 0.39	1.15	0.0	2	21	0	10	nw.	Agent, C. B. & Q. R. R.
Hooper.	Dodge.	1,228	12	52.2	+ 0.3	90	2	19	13	40	4.02	+ 1.54	3.06	T.	5	14	11	6	nw.	T. W. Lyman.
Imperial.	Chase.	3,278	20	53.4	+ 1.2	90	3	17	12	51	0.20	- 0.88	0.20	T.	1					Robt. Malcolm.
Kearney.	Buffalo.	2,146	17	53.2	- 0.4	92	3	17	12	42	1.49	- 0.41	0.95	0.0	4	19	7	5	se.	N. C. Dunlap.
Kimball.	Kimball.	4,697	21	49.0	+ 0.9	82	3	20	12	52	0.60	- 0.03	0.29	0.2	3	23	7	1	w.	F. J. Bellows.
Kirkwood.	Rock.		14	51.6	+ 1.8	94	5	17	13	44	0.74	- 1.02	0.41	T.	3	21	2	8	nw.	Mrs. C. Arter.
Kowanda.	Denell.										0.55		0.41	0.0	4					Geo. W. Hulse.
Leavitt.	Dodge.	1,228																		W. T. Scilley.
Lexington.	Dawson.	2,385	20	51.8	- 0.3	89	2	17	12	49	0.86	- 0.61	0.86	0.0	1	25	0	6	s.	Robt. Chadwick.
Lincoln.	Lancaster.	1,189	24	53.9	+ 0.6	91	3	21	12	30	1.49	- 0.33	1.09	T.	7	13	3	15	s.	U. S. Weather Bureau.
Lodgepole.	Cheyenne.	3,820																		C. H. Cass.
Loup.	Sherman.	2,067		50.6	- 0.6	88	2	18	12	44	1.09	- 1.02	0.84	0.0	2	22	5	4	nw.	S. W. Lightner.
Loyal.	Custer.		17	52.4	+ 1.2	93	6	20	15	45	0.50	+ 0.45	1.05	0.0	3	20	6	5	nw.	C. G. Coglier.
Lyons.	Boyd.	2,506	9	52.7		91	2	20	12	54	0.59	- 0.53	0.59	T.	1	24	2	5	s.	L. L. Slagle.
McCook.	Red Willow.	1,575									3.10	+ 0.40	1.60	T.	4					Dr. F. A. Long.
McCool Junction.	York.	1,585									1.43	- 0.50	0.70	T.	4	17	5	9	se.	John Ellis.
Madison.	Madison.	1,830	15	50.8	0.0	85	5	22	13	37	1.85	- 0.40	1.03	T.	4					J. A. Amsherry.
Marquette.	Hamilton.										1.20	- 0.05	0.95	0.0	2					Joel Hull.
Mason City.	Custer.	2,257									3.06	+ 0.93	1.31	0.0	6	16	9	6	nw.	U. S. Reclamation Service
Minden.	Kearney.	2,169	26	51.9	- 0.3	90	2	18	12	41										Wm. Webster.
Mitchell.	Scottsbluff.		1								1.37	- 0.63		T.	6	17	8	6		Agent, C. B. & Q. R. R.
Monroe.	Platte.	1,525									0.34	- 2.46	0.22	0.0	2	17	8	6	s.	Dr. P. H. Salter.
Nebraska City.	Otoe.	941	27	54.2	+ 0.6	90	3	22	13	43	1.34	- 2.46	0.22	0.0	2	17	8	6	s.	W. G. Rood.
Norfolk.	Madison.	1,532	24	49.9	- 0.6	88	2	17	13	42	0.98	+ 0.35	1.12	0.0	5	19	8	4	s.	U. S. Weather Bureau.
North Loup.	Valley.	1,061	21	51.8	+ 0.4	91	2	19	12	48	0.98	- 0.69	0.75	T.	3	18	9	4	nw.	G. S. Clingman.
North Platte.	Lincoln.	2,841	35	51.4	+ 1.4	88	3	12	12	47	0.20	- 0.95	0.19	0.1	2	18	7	6	nw.	Agent, C. B. & Q. R. R.
Oakdale.	Antelope.	1,722	21	48.2	- 1.3	86	5	18	13	39	1.89	+ 0.33	1.16	0.2	7	14	11	6	nw.	U. S. Weather Bureau.
Odell.	Gage.	1,278									0.55	- 1.73	0.40	T.	2	11	8	12	n.	Agent, C. B. & Q. R. R.
Omaha.	Douglas.	1,103	39	53.6	- 0.6	89	2	26	13	32	1.70	- 0.65	1.38	T.	6	14	6	11	nw.	U. S. Weather Bureau.
Ord.	Valley.	2,062									1.00	- 0.95	0.70	0.0	4	11	13	7	n.	James Milford.
Orleans.	Harlan.	1,993									2.54		1.57	0.0	3					James McGeachin.
Oscola.	Polk.	1,644		49.5		95	8	22	12	50	2.36	- 0.03	1.05	T.	4					Thos. Coles.
Palmyra.	Otoe.	1,142	11	54.0	+ 0.8	90	2	26	12		1.43	- 0.63	0.70	0.0	4	17	9	5	nw.	F. A. Barton.
Pawnee City.	Pawnee.	1,175	6	53.6		92	3	25	12		1.19	- 1.								



TABLE 1.—Climatological data for October, 1909. District No. 6—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.			Number of cloudy days.
Nebraska—Cont'd.																				
Wauneta.	Chase.	1,080	3	52.0 <sup>b</sup>		95 <sup>b</sup>	3	20	13	48	0.90	— 0.39	0.34	T.	5			nw.	C. D. Fuller.	
Weepingwater.	Cass.	1,313	13	50.0	— 3.7	90	2	16	13	44	1.98	+ 0.17	0.90	T.	4	18	5	n.	S. W. Orton.	
Westpoint.	Cuming.	1,325									0.30	— 1.96	0.30	0.0	1	9	6	16	se.	J. C. Elliott.
Wilber.	Saline.	1,380									1.74	— 0.81	0.46	0.0	6	15	6	10	nw.	Agent, C. B. & Q. R. R.
Wisner.	Cuming.	1,380									0.46		0.26	T.	4	15	7	9	ne.	Aoff & Deily.
Woodlawn.	Lancaster.	1,186									1.82	— 0.37	1.10	T.	4	19	5	7	nw.	H. C. Kendall.
York.	York.	1,606	17	53.6	— 0.3	94	3	22	12	45									H. T. Gianque.	
Iowa.																				
Afton.	Union.	1,212	14	50.9	— 2.4	86	2 <sup>†</sup>	19	13	37	3.50	+ 0.88	1.05	T.	8	17	7	7	sw.	N. W. Rowell.
Allerton.	Wayne.	1,513	17	51.2 <sup>a</sup>	— 3.0	90 <sup>c</sup>	2 <sup>†</sup>	19 <sup>c</sup>	13	39 <sup>c</sup>				T.					sw.	Mrs. Geo. Shriver.
Alta.	Buena Vista.		6																	David E. Hadden.
Alta (near).	do.																			W. J. Minard.
Alton.	Sioux.	1,305	3	49.6		84	2	15	13	36	1.43		0.58	T.	6	18	5	8	nw.	W. S. Slagle.
Atlantic.	Cass.	1,164	17	51.3	— 0.3	87	2	18	13	38	2.90	+ 0.38	0.80	T.	7	11	7	13	se.	Thos. H. Whitney.
Audubon.	Audubon.	1,301	15	48.7	— 2.2	83	2	14	13	43	2.38	+ 0.22	0.74	T.	7	17	4	10	nw.	Geo. E. Kellogg.
Bedford.	Taylor.		8	52.0		89	4	15	13	42	3.04		0.71	T.	9	17	5	9	se.	E. E. Healy.
Chariton.	Lucas.	1,042	18	51.2	— 3.0	91	3	18	13	41	2.14	— 0.22	1.12	T.	5	19	6	6	se.	C. C. Burr.
Clarinda.	Page.	1,009	18	51.6	— 2.4	91	2 <sup>†</sup>	20	12	49	2.78	+ 0.28	1.06	T.	8	19	3	9	nw.	H. S. Van Sandt.
Cornings.	Adams.	1,117	16	50.1 <sup>a</sup>	— 3.2	87 <sup>a</sup>	3	18 <sup>a</sup>	13	36 <sup>a</sup>	3.16	+ 0.83	0.80	T.	8				se.	Jerome Smith.
Corydon.	Wayne.	1,101	15	52.9	— 1.9	92	3	19	13	38	2.39	— 0.10	1.13	T.	10	18	3	10	se.	Clara Miller.
Creston.	Union.	1,312	3	51.6		88	3 <sup>†</sup>	16	13	46	2.99		0.90	T.	6	21	1	9	nw.	Edgar Stovall.
Cumberland.	Cass.		9								4.70		1.18						sw.	J. H. Reppert.
Denison.	Crawford.	1,180	13	50.6	— 0.2	86	2	14	13	37	1.71	— 0.32	0.70	T.	8	21	4	6	n.	W. C. Van Ness.
Elliott.	Montgomery.		3	50.8		86	2	20	17	39	3.07		0.75	T.	8	19	5	7	nw.	Henry Barnes.
Hancock.	Pottawattamie.	1,113	2	51.0		86	2	18	13	41	2.15		0.75	0.0	6	17	6	8	se.	G. C. Rogers.
Harlan.	Shelby.	1,192	9	50.0		86	2	15	13	40	1.81		0.55	0.2	7	12	10	9	nw.	C. A. Reynolds.
Hopeville.	Clarke.	1,177	17	51.8	— 2.4	90	2 <sup>†</sup>	18	13	40	3.26	+ 1.02	1.12		8	14	7	10	s.	M. T. Ashley.
Inwood.	Lyon.	1,474	4	49.0 <sup>a</sup>		83 <sup>a</sup>	5 <sup>†</sup>	12 <sup>a</sup>	13	36 <sup>a</sup>	1.27		0.67	0.1	6	22	1	8	nw.	F. B. Hanson.
Lamoni.	Decatur.			51.2		85	3	20	13	36	3.63		1.92	T.	9	15	1	15	se.	T. J. Fitzpatrick.
Larrabee.	Cherokee.	1,266	17	48.2	— 2.1	81	2 <sup>†</sup>	14	13	40	2.58	+ 0.46	0.85	T.	4	18	9	4	s.	H. B. Stever.
Le Mars.	Plymouth.	1,224	12	49.2	— 2.1	78	5 <sup>†</sup>	15	13	34	1.91	+ 0.02	0.75	T.	5	12	10	9	nw.	G. A. C. Clarke.
Lenox.	Taylor.	1,250	13	51.4	— 2.2	85	3	17	13	36	2.93	+ 0.40	0.87	T.	8	18	4	9	s.	J. L. Hurley.
Leon.	Decatur.	1,120	6	51.2		85	3	20	13	38	3.20		1.50	T.	9	14	6	11	se.	Morris Gardner.
Little Sioux.	Harrison.		4	52.4		90	2	17	13	40	1.69		0.56	T.	6	17	5	9	se.	Geo. H. Gibson.
Logan.	do.	928	42	51.5	— 0.6	87	2	17	13	36	1.02	— 1.37	0.75	T.	4	12	12	7	se.	Glen H. Stern.
Mt. Ayr.	Ringgold.	1,236	15	52.6	— 2.3	88	2 <sup>†</sup>	21	13	37	4.32	+ 2.06	1.00		10	15	9	7	se.	A. F. Beard.
Odebolt.	Sac.	1,356	10	50.0	— 2.9	87	2	15	13	37	1.71	— 0.34	0.83	T.	4	18	4	9	—	E. Starner.
Onawa.	Monona.	1,051	8	52.5		88	2	20	13	36	3.73		1.98	T.	7				nw.	C. G. Perkins.
Pacific Junction.	Mills.	960	9	51.0		86	2	18	13	38	1.83		1.53	T.	4	16	11	4	s.	H. H. McCartney.
Rock Rapids.	Lyon.	1,358	9																W. C. Wyckoff.	
Sheldon.	O'Brien.	1,422	8	49.2		85	2	12	13	42	1.90		0.80	T.	6	19	2	10	se.	Dr. A. W. Beach.
Sibley.	Osceola.	1,212	15	45.8 <sup>a</sup>	— 3.8	84 <sup>a</sup>	6	14 <sup>a</sup>	13	37 <sup>a</sup>	1.41	— 0.68	0.55	T.	4	21	0	10	se.	Francis C. Doolittle.
Sioux Center.	Sioux.		9	48.6		81	2	13	13	34	1.59		0.55	T.	4	14	6	11	nw.	J. Deruyter.
Sioux City.	Woodbury.	1,135	20	50.6	— 0.5	87	2	17	13	37	1.63	— 0.16	0.68	T.	6	13	7	11	nw.	U. S. Weather Bureau.
Thurman.	Fremont.		11	52.4	— 2.4	87	2 <sup>†</sup>	20	13	40	1.34	— 1.83	0.42	T.	6	15	6	10	sw.	C. R. Paul.
Washta.	Cherokee.	1,157	10	49.6		87	6 <sup>†</sup>	10	13	46	3.39	+ 1.30	1.50	T.	4	18	5	8	s.	H. L. Felter.
Woodburn.	Clarke.	961	9	50.6		92	3	15	13	45	3.03		1.37	T.	8	18	6	7	se.	C. B. McDonough.
Kansas.																				
Abilene.	Dickinson.	1,157	14								1.04	— 1.20	0.44		4	14	10	7	s.	J. H. Sherman.
Agricultural College.	Riley.	1,100	51	56.9	+ 1.6	94	5	26	12	47	1.60	— 0.71	0.89	0.0	6	18	8	5	sw.	J. O. Hamilton.
Alton.	Osborne.	1,651	7	55.2		95	3	21	12	49	1.32	— 0.38	0.63	0.0	5	18	7	6	s.	H. A. Storer.
Atchison.	Atchison.	973	18	56.6	— 0.4	89	2 <sup>†</sup>	26	12	35	1.85	— 0.86	0.71	0.0	6	16	1	14	s.	M. F. Troxell.
Baker.	Brown.	1,182	9	53.1		89	3 <sup>†</sup>	28	24	39	1.20		0.80	T.	3	12	1	18	s.	E. A. Bastien.
Beloit.	Mitchell.	1,383	14																W. H. Houghton.	
Blakeman.	Rawlins.	2,894	1	52.6		92	2	15	12	62	0.85	— 0.85	0.70	0.0	3	21	4	6	nw.	C. L. Henderson.
Blue Rapids.	Marshall.	1,105	3																M. Norton.	
Centralia.	Nemaha.	1,256		54.2		89	2 <sup>†</sup>	24	12	38	1.73		0.69	T.	5	19	0	12	nw.	L. E. Hazen.
Chapman.	Dickinson.	1,123	5	56.4		93	1 <sup>†</sup>	19	12	48	1.78		0.80	0.0	4	20	6	5	s.	R. McShen.
Clay Center.	Clay.	1,203	8	56.0		96	3	22	12	49	1.22		0.65	0.0	3	15	5	11	s.	O. L. Slade.
Colby.	Thomas.	3,138	18	54.1	+ 1.0	90	2	19	12	50	0.70	— 0.40	0.60	T.	3	21	3	7	n.	R. M. Chelf.
Concordia.	Cloud.	1,398	25	55.8	+ 0.4	90	3	25	12	39	2.80	+ 0.80	2.12	0.0	4	20	4	7	n.	U. S. Weather Bureau.
Densmore.	Norton.	2,200		55.4		94	2 <sup>†</sup>	17	12	52	1.31		0.80	0.0	4	20	4	7	n.	F. S. Griffith.
Dresden.	Decatur.	2,731	15	54.9	+ 0.1	90	2	20	12	48	0.68	— 0.72	0.66	0.0	2	18	9	4	se.	Jacob Beck.
Ellsworth.	Ellsworth.	1,537	5	56.8 <sup>b</sup>		91 <sup>b</sup>	4	21	12	48 <sup>b</sup>	2.02		1.12	0.0	4	23	5	2	s.	George Seitz.
Enterprise.	Dickinson.	1,144	7	58.7		96	3	27	27	48	1.25	— 0.99	0.77	0.0	5	19	2	10	s.	G. F. Wagner.
Eskridge.	Wabaunsee.	1,412	3	57.2		90 <sup>a</sup>	2	17 <sup>a</sup>	12	52 <sup>a</sup>	0.64		0.48	T.	4	26	2	3	s.	C. M. Jennison.
Farnsworth.	Lane.	2,850	8	55.4 <sup>a</sup>		94	4	23	12	48	2.83	+ 0.53	1.44	0.0	6	23	0	8	se.	E. A. Shaver.
Ft. Scott.	Bourbon.	857	13	57.2	— 1.8	94	4	25	12 <sup>†</sup>	49	0.90	— 1.64	0.80	T.	2	14	12	5	sw.	E. C. Dunham.
Frankfort.	Marshall.	1,146	15	55.4	— 2.2	93	4													

TABLE 1.—Climatological data for October, 1909. District No. 6—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.			Number of cloudy days.
Kansas—Cont'd.																				
Scott.....	Scott.....	2,971	3	55.8		92	2	23	12	56	0.53		0.30	T.	3	18	7	6	s.	J. B. Loughran.
Topeka.....	Shawnee.....	997	23	56.6	+ 0.3	91	2	27	12	35	1.35	- 0.56	0.78	0.0	5	17	6	8	s.	U. S. Weather Bureau.
Valley Falls.....	Jefferson.....	913	10	56.3	+ 0.2	90	2	26	12	38	1.49	- 0.52	0.88	T.	5	17	6	8	se.	Miss Nettie Maxwell.
Vinland.....	Douglas.....	880		56.9		91	3	25	24	40	1.92		0.87	0.0	4	15	4	12	s.	A. Schick.
Wakeeney.....	Trego.....	2,456	5	55.6	+ 0.3	89	2	19	12	48	1.41	+ 0.02	0.88	0.0	4	23	1	7	s.	A. S. Peacock.
Wallace.....	Wallace.....	3,303	39	54.2		91	2	20	12	57	0.86	- 0.08	0.66	T.	2	10	15	6	nw.	M. T. Griggs.
Wamego.....	Pottawatomie.....	1,002	16							2.31	+ 0.23	1.35	T.	4	14	5	12	sw.	M. L. Stone.	
Missouri.																				
Albany.....	Gentry.....		2							2.50		1.30	T.	5	20	3	8	s.	W. E. Elder.	
Amoret.....	Bates.....	850	0	57.8		93	5	25	12	53	0.56		0.22	0.0	5	23	0	8	s.	C. L. Glassmire.
Appleton City.....	St. Clair.....	853	18	59.6	+ 0.7	96	4	23	12	53	1.10	- 1.28	0.70	0.0	2	20	8	3	s.	T. C. Brown.
Arlington.....	Phelps.....	695	23																	P. W. Andros.
Arthur.....	Vernon.....	767	16	59.6	+ 3.5	95	5	25	12	50	2.04	- 0.13	0.62	0.0	4	19	8	4	sw.	J. T. Armstrong.
Avalon.....	Livingston.....		24	55.2	- 2.9	92	2	25	12	42	5.53	+ 2.07	2.50	0.0	7	17	5	9	sw.	F. G. Ashbaugh.
Bagnell.....	Miller.....	594	14																	W. S. Brockman.
Bethany.....	Harrison.....	851	19	54.6	- 2.7	84	8	24	13	32	2.91	+ 0.50	1.32	T.	8	19	5	7	se.	W. H. Skinner.
Bolivar.....	Polk.....	1,070	21	60.0	+ 2.0	94	5	25	12	48	4.36	+ 1.73	2.09	0.0	8	17	9	5	sw.	E. Waltz.
Boonville.....	Cooper.....	600	33							2.86	+ 0.09	1.14	0.0	9	21	1	9	se.	C. Randecker.	
Brunswick.....	Chariton.....	651	30	54.8	- 1.6	92	2	28	13	40	5.18	+ 2.40	1.43	0.0	8	17	3	10	se.	Louis Beneke.
Clinton.....	Henry.....	800	7	58.8		93	3	25	12	43	3.10		1.56	0.0	5	20	8	3	s.	Dr. G. W. Menes.
Columbia.....	Boone.....	784	18	55.6	+ 0.8	90	2	25	13	39	4.70	+ 2.28	1.53	T.	13	19	5	7	se.	U. S. Weather Bureau.
Conception.....	Nodaway.....	982	24	53.7	- 1.8	89	3	25	12	34	2.14	- 0.39	0.60	T.	6	12	10	9	nw.	Fr. Adelm Hess.
Darksville.....	Randolph.....	826	18	54.9	- 2.1	88	2	24	13	34	5.25	+ 3.60	2.20	0.0	6	16	6	9	sw.	W. H. Brodelus.
El Dorado Springs.....	Cedar.....	750	3	59.9		95	2	23	12	46	2.52		0.95	0.0	4	18	5	7	sw.	Samuel Graham.
Fairport.....	De Kalb.....	920	15							2.22		1.02	T.	6	20	3	8	s.	T. Berry Smith.	
Fayette.....	Howard.....	725	26	54.0	- 3.1	87	2	25	12	35	4.25	+ 1.92	1.49	0.0	7	18	3	10	sw.	Mrs. Ruth McKinney.
Fulton.....	Galloway.....	818	18	56.0	- 1.8	94	2	21	13	51	4.31	+ 1.93	2.30	0.0	9	9	17	5	sw.	Dr. W. P. Young.
Gallatin.....	Davies.....	803	16							2.53	- 0.08	0.75	0.0	6	21	4	6	sw.	J. J. Shaughnessy.	
Glasgow.....	Howard.....	618	30																	W. H. Campbell.
Grant City.....	Worth.....	1,130	17	53.4		89	3	22	13	35	2.97	+ 0.40	0.86	T.	8	21	5	6	s.	A. J. Sharp.
Harrisonville.....	Cass.....	912	37	56.2	+ 0.3	90	2	25	12	41	1.42	- 1.19	0.62	0.0	5	17	5	9	sw.	W. H. Baker.
Hazelhurst.....	Livingston.....		16							3.41	+ 1.63	1.45	T.							C. T. Maushund.
Hermann.....	Gasconade.....	482	35							4.81	+ 2.39	2.24	0.0	10	15	8	8	e.	E. Dempsey.	
Houston.....	Texas.....	1,250	17	57.5	+ 0.5	91	3	25	13	45	1.65	- 0.67	0.65	0.0	4	15	14	2	s.	F. H. Hammett.
Huntville.....	Randolph.....	790	6							4.10		1.50	0.0							Miss Emma Swift.
Jefferson City.....	Cole.....	628	27	55.4	- 1.3	95	2	25	13	51	3.19	+ 1.05	1.91	0.0	8	25	1	5	n.	U. S. Weather Bureau.
Kansas City.....	Jackson.....	963	21	57.3	+ 1.5	89	2	28	12	34	0.97	- 1.24	0.40	T.	6	16	7	8	nw.	J. F. Sharp.
Kidder.....	Caldwell.....	1,017	16	55.2	- 0.7	88	2	26	12	33	2.44	- 0.21	1.23	0.0	8	16	6	9	sw.	J. R. Wade.
Lamonte.....	Pettis.....	863	21	57.3		92	2	25	12	43	4.06	+ 2.92	2.57	T.	6	15	8	8	sw.	M. W. Serl.
Lebanon.....	Laclede.....	1,265	20	59.4	+ 1.0	90	3	26	12	37	2.31	- 0.29	1.10	0.0	3	17	7	7	nw.	J. W. Keithley.
Lexington.....	Lafayette.....	813	27	57.1	- 0.4	90	3	28	12	40	2.75	+ 0.11	1.14	0.0	6	22	0	9	s.	J. W. Kyle.
Liberty.....	Clay.....	864	21	57.2	+ 0.1	90	2	27	12	42	1.04	- 1.20	0.50	T.	4	21	2	8	nw.	C. S. Crow.
Lockwood.....	Dade.....	1,088	14	60.3		91	2	24	12	39	2.97	- 0.02	1.23	0.0	4	19	4	8	sw.	W. H. Black.
Marshall.....	Saline.....	779	18	56.4	- 0.4	91	2	27	12	42	3.79	+ 1.40	2.05	T.	5	19	4	7	sw.	Dr. J. P. Keller.
Marshfield.....	Webster.....	1,492	0																	J. R. Brink.
Maryville.....	Nodaway.....	1,160	19	52.1	- 1.4	90	3	23	13	43	1.56	- 0.90	0.82	0.0	5	18	2	11	e.	Dr. O. H. Brown.
Mt. Vernon.....	Lawrence.....	1,480	33	59.6	+ 0.3	91	2	27	12	45	3.69	+ 0.38	1.33	0.0	7	19	6	6	se.	C. Jewell.
Nevada.....	Vernon.....	869	15							2.59	+ 0.16	0.88	T.	4	23	5	3	sw.	A. I. Zeigle.	
New Palestine.....	Cooper.....	795	17	59.4	+ 0.2	96	3	25	13	47	4.96	+ 2.61	1.60	T.	5	18	8	5	sw.	Tom Curry.
Oregon.....	Holt.....	1,113	54	52.9	- 2.0	86	2	23	12	34	2.56	- 0.08	1.02	T.	7	18	1	12	nw.	W. E. Matthews.
Oseola.....	St. Clair.....	738	9							2.98		1.35	0.0	3	23	3	5	sw.	Prof. A. D. Wolfe.	
Parkville.....	Platte.....		0																	Prof. P. J. Wilkins.
Rolla.....	Phelps.....	1,092	28	58.4		91	2	27	12	40	2.22	- 0.17	0.97	0.0	5	20	3	8	sw.	L. C. Sager.
St. Charles.....	St. Charles.....	614	31	56.3	- 1.3	91	3	26	13	35	3.73	+ 1.35	1.64	0.0	4	17	8	6	s.	Grant Forbes.
St. Joseph.....	Buchanan.....	825	37	56.4		92	4	27	12	39	0.98	- 1.65	0.48	0.0	6	19	6	6	se.	U. S. Weather Bureau.
St. Louis.....	Buchanan.....	567	39	55.4	- 2.0	87	3	32	12	30	3.40	+ 0.99	1.44	T.	11	17	8	6	nw.	Erres Springs.
Sublett.....	Adair.....	1,000	29																	J. H. Flesher.
Trenton.....	Grundy.....	812	14	53.7	- 2.6	85	3	27	12	38	3.28	+ 1.08	2.30	T.	8	13	5	13	se.	Geo. W. Davis.
Unionville.....	Putnam.....	1,672	16	51.8	- 3.6	90	2	22	13	40	3.51	+ 1.58	1.40	T.	9	18	2	11	s.	Prof. S. F. Prince.
Versailles.....	Morgan.....	1,021	8																	John H. Frick.
Warrensburg.....	Johnson.....	883	30	58.8	+ 1.0	92	2	25	12	39	2.97	+ 0.43	1.03	0.0	7	20	3	8	sw.	Dr. J. R. Smith.
Warrenton.....	Warren.....	865	19	54.3	- 1.1	87	3	26	13	41	3.81	+ 1.38	1.50	0.0	9	16	7	8	sw.	Mrs. S. A. Jackson.
Warsaw.....	Benton.....	700	5	60.0		93	2	26	12	48	4.83		2.07	0.0	4	19	5	4	sw.	
Wheatland.....	Hickory.....	920	17							4.46	+ 2.17	2.16	0.0	5	19	5	7	sw.		

\* Precipitation included in that of the next measurement.

\*\* Temperature extremes are from observed readings of the dry-bulb; means are computed from observed readings.

† Also on other dates.

‡ Data are from standard instruments; not supplied by the U. S. Weather Bureau.

§ Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

|| Estimated by observer.

¶ Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.

a, b, c, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.



Stations.	River basins.	Day of month.																																Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
<b>Wyoming.</b>																																		
Arapahoe.....	Big Horn.....			.02	.05			.11				.06																					0.24	
Barnum.....	Powder.....							.35				.14	.50																				0.99	
Basin.....	Big Horn.....																																0.00	
Bennett.....	North Platte.....				.11																												0.15	
Cheyenne.....	South Platte.....			.01	.06	T.	T.	.01	T.		T.	.19																			.04		.01	
Cheyenne Exp. Farm.....	do.....				T.	T.	T.		T.		T.	.05																					T.	
Chugwater.....	North Platte.....					T.	T.	.12	.04			.09	.14																				.15	
Clark.....	Clark's Fork.....				.10			.14				.04	.11				T.				T.													
Crystal Lake Reservoir.....	South Platte.....				T.			.16	.06	T.		T.	.03																				T.	
Douglas.....	North Platte.....					.13	T.	.01			.03	.45	.13																				T.	
Dubois.....	Big Horn.....			.11	.16																	T.												
Eaton's Ranch.....	Tongue.....																					T.												
Echeta.....	Powder.....							T.				T.													.14								T.	
Elk Mountain.....	North Platte.....				.06		.13		.07			.09																					.03	
Encampment.....	do.....			T.		.01			T.																								T.	
Ervay.....	do.....			T.	.14			.26				.37																						
Filmore.....	do.....				.22							.06																					.05	
Fort Laramie   .....	do.....																																	
Gillette.....	Powder.....							.09	T.													T.												
Granite Canyon.....	South Platte.....				.02	.05	.10	.03	T.		T.	.04																					.04	
Hunter's Station.....	Powder.....							T.</																										

## MONTHLY WEATHER REVIEW.

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TABLE 2.—Daily precipitation for October, 1909. District No. 6—Continued.

Stations.	River basins.	Day of month																																Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
<i>Montana—Cont'd.</i>																																		
Dry Wolf Camp	Missouri				.02			.04			.41										T.				.21					.01		0.69		
E. Gallatin River	Gallatin	.42		.08	.12		T.	.15			.01	.26										.41										1.45		
Ekilaka	Little Missouri																																	
Elkhorn	Jefferson	.04			.10			.05		T.	T.	.04	T.									.03	T.							T.	T.		0.26	
Evans	Missouri																																T.	
Fallon	Yellowstone																					T.												
Family	Marias																																	
Fish Creek	Jefferson	.52	T.		.23	T.	T.	.26											T.	T.		T.	T.	T.					.08	T.	T.		1.09	
Fish Tail Creek	Yellowstone		T.		.06	.24		T.			.50	.38												.11									1.29	
Flathead Creek	do.	.38		.24			.39				.11												.39							.20			1.29	
Forsyth	do.								T.		T.																						T.	
Fort Benton	Missouri															.35																	0.35	
Fort Shaw	Sun River										.21											.04											0.25	
Foster	Big Horn							.12			.01	.01																			T.		0.14	
Garnell	Musselshell	.89	.10																														0.99	
Glendive	Yellowstone													T.																			T.	
Goldbutte	Marias							.30			.06													T.		.07							0.43	
Graham	Powder																																	
Grayling	Madison			.42	.15				T.	T.											T.	T.							.04		T.		0.61	
Great Falls	Missouri										.22				T.						T.	.19				.07							0.48	
Half Moon Pass	Musselshell							.08			.80																							



TABLE 2.—Daily precipitation for October, 1909. District No. 6—Continued.

Stations.	River basins.	Day of month.																																Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
North Dakota—Cont'd.																																	0.67	
New England.	Cannon Ball.							.05	.45	.05		.10		T.							T.				.05								0.70	
New Salem.	Heart.						.38		.12																								0.50	
Orange.	Cannon Ball.																																0.69	
Palermo.	Missouri.								.69		T.	T.						T.		T.	T.				T.								0.68	
Steele.	do.																																0.27	
Stuartwood.	Grand.				T.			.61	.05		T.							.11							T.					.02			0.21	
Washburn.	Missouri.							.11			.05														T.								.01	0.40
Williston.	do.							.01						T.			.02	.07			.04				.01		T.							
Wishek.	do.							.40																										
South Dakota.																																	0.85	
Aberdeen.	James.							.07	.40	.15	.30	T.	T.										.11			T.							1.17	
Academy.	Missouri.							.07	.34	.36	.24	T.	T.											.60									1.87	
Alexandria.	James.							*	1.27			T.																					2.44	
Andover.	do.								1.08	1.10											.26												0.38	
Ardmore.	Cheyenne.						.38																T.										1.85	
Armour.	Missouri.							.08	.87	.48	T.													.34	.05			.03					T.	
Ashcroft.	Little Missouri.							T.	T.																								0.41	
Belle Fourche.	Cheyenne.							T.	.38	T.		.03	T.											T.									1.71	
Bowdle.	Missouri.																																1.27	
Brookings.	Big Sioux.							.01	.30	.78	.15	T.												.47									1.31	
Burke.	Missouri.							.15	.30	.62														.41										

## MONTHLY WEATHER REVIEW.

OCTOBER, 1909

TABLE 2.—Daily precipitation for October, 1909. District No. 6—Continued.

[illegible]



TABLE 2.—Daily precipitation for October, 1909. District No. 6—Continued.

Stations.	River basins.	Day of month																														Total.				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				
<b>Nebraska—Cont'd.</b>																																				
Marquette.....	Platte.....							1.03	.31	.09	T.																			.42	1.85					
Mason City.....	Loup.....																															1.31	3.06			
Minden.....	Blue.....							T.	1.00	.59	.14	T.									.01	.01										.22	0.34			
Nebraska City.....	Missouri.....																					.12										.24	1.98			
Norfolk.....	Elkhorn.....							1.12	.39	.08	T.												.15									.08	0.98			
North Loup.....	Loup.....							T.	.75	.18	.05	T.																				.04	1.89			
North Platte.....	Platte.....							T.	.19			.01									T.	T.										.85	1.70			
Oakdale.....	Elkhorn.....							.01	1.16	.55	.08	.02	T.										.03										.46	1.19		
Omaha.....	Missouri.....							T.	.19	.33	.10	T.										.13		.10									.50	1.52		
Ord.....	Loup.....																																.12	1.56		
Pawnee City.....	Great Nemaha.....								.16	.46	.11	T.																					.75	2.65		
Plymouth.....	Blue.....																																.45	1.57		
Purdum.....	Loup.....								.43			T.																					.45	1.57		
Ravenna.....	do.....								.84	.18		T.																					.42	1.37		
Redcloud.....	Republican.....							T.	1.10	.25	.07	.02		T.																			.02	0.02		
St. Libory.....	Loup.....																																	.18	1.33	
St. Paul.....	do.....							T.	.83	.35	.07	.08																						.20	2.09	
Santee.....	Missouri.....								.01	.88	.87	.15	T.	T.									.18										.90	0.90		
Sargent.....	Loup.....								T.	.90																								.80	0.80	
Schuyler.....	Platte.....									.10	.60	.10																					.08	0.97		
Scottsbluff.....	North Platte.....							T.	.89	T.																								T.	2.70	3.65
Seward.....	Blue.....								.30	.60	.05																							.90	1.98	
Sheridan.....	Loup.....								T.	.80	.50																							.01	0.49	
Sidney.....	North Platte.....								.48																										.55	0.55
Springview.....	Nebraska.....								T.	.30	T.	.15	.10																					.30	1.79	
Stanton.....	Elkhorn.....									.62	.70	.17	T.																							
Stratton.....	Republican.....																																			
Superior.....	do.....								1.50		.40																							.75	2.65	
Tecumseh.....	Great Nemaha.....								.22	.90																								.45	1.57	
Tecumseh.....	Missouri.....										.52	.68	T.										.10	.17										1.10	2.57	
Turkington.....	Little Nemaha.....									.45	.15	.21	T.																					.42	1.37	
Valentine.....	Nebraska.....								.02	T.																									.02	0.02
Wahoo.....	Platte.....										.40	.31																							1.22	1.93
Wakefield.....	Elkhorn.....								T.	.20	.58	.22	T.											.40										.30	1.70	
Walsh.....	Missouri.....																																			
Watertown.....	Platte.....																																			
Wauneta.....	Republican.....																																			
Weepingwater.....	Missouri.....								.08	.34	.33	T.											.11		.04									T.	0.90	
Westpoint.....	Elkhorn.....								.10		.54	.44	T.																					.90	1.98	
Winer.....	Elkhorn.....									.46	.38	.41	.23	.08										.18											1.74	
York.....	Blue.....								T.	1.10	.38	.14	T.																					.20	1.82	
<b>Iowa.</b>																																				
Afton.....	Missouri.....								.58	1.05	.86	T.			.16								.23		.16	.38							.08	3.50		
Allerton.....	Chariton.....																																			
Alta.....	Little Sioux.....																																			
Alta (near).....	do.....																																			
Alton.....	Floyd.....									.58	.12	.03												.39	.19									.12	1.43	
Atlantia.....	Nishnabotna.....								T.	.74	.80	T.			.08								.33		.47	.17								.34	2.90	
Audubon.....	do.....									.74	.68				.15									.40	.15									.05	2.38	
Bedford.....	Missouri.....								T.	.71	.65	.04			.08								.31		.40	.09								.65	3.04	
Chariton.....	Chariton.....								T.	1.12	T.	.10	T.											.50	.20									.22	2.14	
Clarinda.....	Nodaway.....								1.06	.13	.34			.04	T.								.28		.10									.80	2.78	
Corning.....	do.....									.77	.77	.05			.05								.35		.12	.25								.80	3.16	
Corydon.....	Chariton.....								* 1.13	.08	.07				.07								.06		.37	.34								.18	2.39	
Creston.....	Missouri.....									.76	.90	.38	T.		T.	.08							.25	T.	.62									.29	2.99	
Cumberland.....	Nodaway.....								1.05	.18													.85		.62								.74	2.64	4.70	
Denison.....	Missouri.....									.53	.33	.01	T.		.08								.05		.55	.15								.01	1.71	
Elliot.....	Nishnabotna.....								.08	.70	.83	T.			.02								.33		.09	.27								.75	3.07	
Greenfield.....	Nodaway.....																																			
Hancock.....	Nishnabotna.....								T.	.60	.75												.22		.12	.26								.20	2.15	
Harlan.....	do.....								T.	.55	.53	.02	T.		.07									.33	.08									.23	1.81	
Hopeville.....	Missouri.....								.34	1.12	.27	T.	T.		.38								.14		.36	.33								.32	3.26	
Inwood.....	Big Sioux.....								.06	.67	.18	.02												.26	.08										1.27	
Lamoni.....	Missouri.....								T.	1.93	.80	.02			T.	.06							.20		.15	.22	T.							.05	3.63	
Larrabee.....	Little Sioux																																			

TABLE 2.—Daily precipitation for October, 1909. District No. 6—Continued.

Stations.	River basins.	Day of month.																																Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
<b>Kansas—Cont'd.</b>																																			
Garnett.....	Marais des Cygnes.....							.09	.77										.09		.23										.47	1.65			
Gove.....	Smoky Hill.....																																		
Hanover.....	Blue.....							.15	.45	.05	T.										.15											T.	0.80		
Harrison.....	Republican.....							.25	.93	.43	.04	.02																					.09	1.76	
Hays.....	Smoky Hill.....							T.	1.43	.07											.14													1.64	
Hill City.....	Solomon.....																																		
Horton.....	Kansas.....							T.	.75		T.								T.			.14											.35	1.24	
Hoxie.....	Solomon.....							T.	.54		T.	T.										T.												0.54	
Jewell.....	Republican.....							1.56		.02	T.																						T.	1.58	
Lawrence.....	Kansas.....							.51	.23	.09	T.								.02		*	.21				.01							.61	1.68	
Lebanon.....	Solomon.....							.04	1.08	.38	.15	.05									.03												.10	1.83	
Lindsborg.....	Smoky Hill.....																																		
Manhattan.....	Kansas.....							T.	.03	.79	.41	T.	T.								.02	.12											T.	1.37	
Mankato.....	Republican.....							1.20				.03		.03																				1.26	
Minneapolis.....	Solomon.....							T.	2.47	.84	.08	T.									.10													3.49	
Moran.....	Marmaton.....							.12	.49		T.								T.	.34	.04	.27											.33	1.59	
Norton.....	Republican.....							.70	.05	.05	T.																							.43	1.23
Oberlin.....	do.....							T.	.78		T.										T.	T.												0.78	
Oketo.....	Blue.....								.48	.02	T.								T.															0.50	
Olathe.....	Kansas.....							.02	.43	.06	T.								T.	T.		.13												1.40	2.04
Osage City.....	Marais des Cygnes.....							.22	.63	T.											.25													.41	1.51
Ottawa.....	do.....							.20	.97		T.				T.				T.	.05		.38					T.							1.23	2.83
Paola.....	do.....																																		
Phillipsburg.....	Solomon.....							T.	1.17	.19	.10										T.	T.												.04	1.50
Pleasanton.....	Marais des Cygnes.....								.90											.62		.26												.63	2.41
Republic.....	Republican.....																																		
Russell.....	Smoky Hill.....							1.15	.93	.01											.34	.12												2.55	
St. Francis.....	Republican.....							.10	.92			.14																						1.16	
Salina.....	Smoky Hill.....							T.	1.65	.68	.17	T.							T.	T.	.12	.14												2.76	
Scott.....	do.....							.12	.30			.11									T.	T.												T.	0.53
Topeka.....	Kansas.....							.58	.24		T.								T.		.17	.01												.35	1.35
Valley Falls.....	do.....							.03	.88	.01	T.				T.				T.	T.		.22												.35	1.49
Vinland.....	do.....							.30	.57												.22													.83	1.92
Wakeeney.....	Smoky Hill.....							T.	.88	.05	T.										.03													.45	1.41
Wallace.....	do.....							.20	.66		T.																							T.	0.86
Wamego.....	Kansas.....							1.35	.34		T.				T.				T.		T.	.22												.40	2.31
<b>Missouri.</b>																																			
Albany.....	Grand.....							1.30	.10	.30	T.							.20				.60												2.50	
Amoret.....	Osage.....								.10											.12	.22	.02												.10	0.56
Appleton City.....	do.....							.40																										.70	1.10
Arlington.....	Gasconade.....																																		
Arthur.....	Osage.....							.51													.47	.44												.62	2.04
Avalon.....	Grand.....							2.50	.93	.03								.90	.24		.38													.55	5.53
Bagnell.....	Osage.....							1.32	.40	.01					.04			.24			.32	.21												.37	2.91
Bethany.....	Grand.....							.02	.09	.01									.47	.05	.57	.06												1.09	4.36
Bolivar.....	Missouri.....							.80	.26	.02	T.							.08	1.14	.08	.30	.16		.02										2.86	
Boonville.....	do.....							.85	1.16	.15	.04							1.02	1.43		.48			.05										5.18	
Brunswick.....	Grand.....							T.	.56									1.56	.05	.46														.47	3.10
Clinton.....	Osage.....							.09	.46	.01	.01		.01	.03			.01	1.53	.22	.03	.88		.19											1.23	4.70
Columbia.....	Missouri.....							.09	.60	.40	T.							.25		.30	T.													.50	2.14
Conception.....	do.....							.70										.95	2.20		.65		.20											.35	5.25
Darksville.....	Chariton.....							.65											.50		.42													.95	2.52
El Dorado Springs.....	Osage.....							1.02	.25	T.								.35		.34		.11												.15	2.22
Fairport.....	Grand.....							.90		.05								T.	1.49	.48		.57		.02										.74	4.25
Fayette.....	Missouri.....							.21	T.	.02	.01	T.	.05				T.	.59	2.30	T.	.76		.16											.21	4.31
Fulton.....	do.....							.75	.38	.30								.18		.42		.12												.38	2.53
Gallatin.....	Grand.....							1.20		.08								.98	.75		.33		.29											.25	2.97
Glasgow.....	Missouri.....							.27	.86	.62	.03		T.	T.				.27			.34		.33											1.42	
Grant City.....	do.....							.45	.06									.62	.04	.25	T.													.05	3.41
Harrisonville.....	Osage.....							.78	1.45	.25	.03	T.	T.					.42		.25	.18													.41	4.81
Hazelhurst.....	Grand.....							T.	.54	.04	.01				.04			.44	2.24	.12	.16		.12		.10	T.								.65	1.65
Hermann.....	Missouri.....							.12	.35									T.		.50		.50												.70	4.10
Houston.....	Gasconade.....							.50										1.50	.70		.50		.10											.31	3.19
Huntsville.....	Chariton.....							.37	.05	.08	T																								



TABLE 3.—Maximum and minimum temperatures at selected stations, October, 1909. District No. 6, Missouri Valley.

Date	Wyoming.																Montana.											
	Basin.		Cheyenne.		Fort Laramie. §§		Lander.		Newcastle.		Pathfinder.		Sheridan.		Yellowstone Park.		Billings. §§		Dillon.		Havre.		Helena.		Lewiston.		Malta.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	70	33	68	44	73	44	63	28	70	48	72	39	66	31	56	29	64	32	64	30	62	40	59	33	76	45	62	41
2...	66	40	77	40	85	34	76	37	65	43	73	40	73	40	65	33	67	34	66	29	69	30	58	36	71	42	72	35
3...	65	40	76	43	81	38	75	38	60	38	74	42	76	39	66	40	73	35	68	39	77	48	72	43	68	42	73	42
4...	74	50	72	45	78	48	70	40	67	32	82	47	77	50	63	39	79	38	70	30	71	46	63	45	68	39	73	44
5...	76	50	75	47	86	45	70	37	68	38	79	41	78	47	60	34	78	40	71	31	77	45	65	38	.....	.....	77	38
6...	76	40	71	45	81	48	68	34	72	40	81	42	73	44	54	33	76	36	67	36	72	48	60	41	.....	.....	75	40
7...	66	36	55	31	60	49	56	21	70	38	70	35	52	37	43	21	55	34	63	33	52	34	45	35	.....	.....	63	44
8...	52	29	40	23	44	16	62	16	62	36	51	25	50	23	42	16	56	31	69	37	54	33	50	29	.....	.....	55	29
9...	60	28	52	19	60	18	60	22	56	20	56	24	65	18	59	30	74	34	76	35	67	43	62	43	.....	.....	69	33
10...	61	30	53	39	57	43	65	31	50	24	55	41	57	33	55	36	56	36	78	31	55	37	62	35	.....	.....	62	38
11...	60	30	39	23	40	30	45	31	44	14	57	31	40	24	47	28	47	34	76	32	46	21	47	33	42	21	41	18
12...	56	22	60	22	62	13	60	23	42	18	62	26	52	18	61	23	54	20	79	32	47	16	62	28	53	21	40	10
13...	63	30	67	40	76	22	74	33	48	22	64	32	67	35	61	44	73	26	78	33	71	24	67	45	64	32	56	18
14...	68	34	68	38	73	30	74	32	52	27	60	34	64	30	63	39	70	44	80	31	62	32	64	44	59	35	60	29
15...	66	29	66	32	68	24	65	30	54	30	66	32	60	26	62	32	60	24	80	33	56	26	57	35	56	24	57	24
16...	67	30	56	30	62	23	62	34	60	28	71	31	63	23	64	29	56	24	75	31	54	22	61	32	63	30	51	20
17...	65	25	51	27	59	30	55	28	58	24	71	31	48	34	45	23	44	28	76	30	45	31	46	35	45	30	43	31
18...	56	22	48	23	60	18	57	23	64	30	66	23	60	20	61	25	56	20	75	31	56	24	51	29	62	28	51	25
19...	60	28	62	26	71	21	65	31	65	35	65	31	56	22	59	35	60	25	78	34	47	25	56	36	52	30	53	24
20...	63	29	58	34	68	24	55	32	60	30	62	33	57	29	45	33	62	28	75	28	55	36	54	34	55	32	52	35
21...	63	27	66	32	69	20	63	23	70	29	58	27	70	24	50	30	62	24	74	23	60	28	56	31	62	30	63	25
22...	64	30	54	28	59	35	57	23	57	35	60	28	57	35	50	21	62	26	72	25	56	33	55	34	68	32	57	33
23...	60	24	67	28	49	16	65	24	69	29	62	25	67	20	59	20	66	22	74	28	58	30	57	34	63	32	52	26
24...	61	22	65	31	71	25	62	27	61	40	58	28	68	28	51	33	59	24	79	33	61	39	57	42	60	29	57	25
25...	60	24	68	25	73	12	68	19	68	29	52	22	71	20	55	31	36	27	76	31	56	35	56	32	59	29	58	28
26...	60	22	53	26	62	21	61	25	58	28	58	24	56	25	52	24	57	22	75	29	53	26	52	38	47	21	52	28
27...	56	21	59	26	78	22	63	22	55	30	58	28	67	21	61	25	66	20	70	26	60	25	57	30	71	31	61	24
28...	60	22	70	31	75	12	70	27	67	32	61	30	79	26	60	35	76	25	70	28	72	27	66	32	71	36	64	27
29...	71	28	71	35	80	29	58	26	73	36	63	43	69	27	48	26	64	26	65	29	55	28	52	37	55	34	50	25
30...	67	21	59	26	69	19	53	20	65	35	53	30	53	21	35	25	56	20	61	26	52	24	48	30	51	29	49	20
31...	60	20	45	29	59	27	49	20	.....	.....	45	28	55	24	32	25	.....	19	68	23	56	23	54	25	52	29	55	16
Mns	63.7	29.5	61.0	31.9	67.7	28.3	62.3	27.7	61.0 <sup>a</sup>	31.5 <sup>a</sup>	63.3	32.0	62.8	28.5	54.3	30.0	62.1 <sup>a</sup>	28.4	72.5	30.5	50.3	31.9	57.1	35.3	59.8 <sup>f</sup>	31.3 <sup>f</sup>	58.5	28.9

Date	Montana.				North Dakota.								South Dakota.															
	Miles City.		Poplar.		Berthold Agency.		Bismarck.		Dickinson.		Jamestown.		Williston.		Aberdeen. §§		Chamberlain.		Huron.		Kadoka.		Lemmon.		Pierre.		Rapid City.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	68	42	67	40	78	33	71	42	66	45	62	47	65	42	75	40	82	40	74	53	70	48	.....	.....	72	53	66	50
2...	76	48	78	33	77	35	74	36	73	42	72	32	74	30	72	40	79	44	78	42	75	43	.....	.....	76	48	72	44
3...	80	50	79	45	88	49	78	37	75	39	96	33	75	41	78	40	80	38	79	41	79	44	.....	.....	80	47	75	46
4...	82	62	86	50	85	42	84	51	85	51	72	33	88	41	81	43	80	42	80	48	91	52	83	51	87	53	83	47
5...	82	48	83	41	85	40	88	60	80	42	88	27	80	40	90	44	93	54	88	55	91	54	85	52	93	57	81	55
6...	78	50	82	40	70	44	88	48	79	44	80	52	80	44	91	56	90	51	88	55	93	49	85	49	92	58	81	59
7...	54	50	76	40	55	37	65	45	68	44	81	50	57	43	80	59	88	49	76	49	71	41	75	49	73	47	68	39
8...	55	39	57	28	.....	.....	52	35	51	33	62	37	55	28	55	48	81	48	51	45	59	40	55	36	53	46	50	36
9...	70	29	67	21	80	20	55	23	61	24	55	29	63	18	48	40	74	41	47	40	55	30	57	25	54	37	59	33
10...	52	42	58	38	60	30	56	29	54	36	54	25	54	30	60	36	61	38	58	38	44	20	55	34	62	36	57	36
11...	45	26	43	17	50	25	33	23	44	21	47	13	30	18	35	30	56	26	39	27	38	22	48	22	46	29	36	22
12...	44	14	35	4	36	18	27	13	28	18	31	9	27	11	37	21	35	23	30	17	55	21	38	18	33	19	37	14
13...	52	25	49	11	45	5	41	8	46	15	39	5	43	6	44	10	35	24	43	14	58	32	47	11	47	17	60	23
14...	62	40	58	30	51	29	49	26	51	24	40	13	53	23	52	15	87	16	52	31	62	36	53	31	58	33	62	45
15...	59	28	57	24	56	32	55	28	55	23	55	17	54	28	58	28	63	32	59	34	61	31	51	25	63	40	59	33
16...	60	29	53	18	54	31	51	24	54	24	50	21	50	15	50	22	58	26	54	26	62	28	53	23	56	27	60	30
17...	44	34	46	21	45	32	40	31	47	26	43	29	37	23	38	22	60	30	48	36	49	33	49	26	52	36	51	32
18...	58	44	47	16	48	17	46	21	44	30	40	23	46	16	50	22	59	31	49	25	62	27	41	28	48	24	48	30
19...	58	27	51	17	60	27	59	31	59	27	53	25	55	22	55	29	56	26										

TABLE 3.—Maximum and minimum temperatures at selected stations, October, 1909. District No. 6—Continued.

Date	South Dakota.						Colorado.				Nebraska.																	
	Sioux Falls.			Watertown.			Denver.		Wray.		Alma.		Bridgeport.		Grand Island.		Hay Springs.		Hebron.		Lincoln.		North Platte.		Oakdale.		Omaha.	
	Max.	Min.		Max.	Min.		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	82	47	74	49	78	51	74	47	83	45	87	47	87	42	84	51	70	54	.....	.....	85	52	84	49	79	47	80	53
2	85	46	74	40	84	51	78	44	87	38	89	53	85	36	88	58	81	37	.....	.....	90	56	87	40	82	43	89	58
3	80	48	72	45	80	51	78	47	88	43	89	48	86	36	91	68	86	38	.....	.....	91	54	88	47	80	48	86	60
4	84	50	79	46	79	52	75	51	88	46	86	53	85	40	89	48	85	47	.....	.....	89	50	87	50	81	46	83	57
5	87	52	86	52	89	57	79	51	87	52	87	53	85	43	88	51	89	42	.....	.....	89	56	88	56	86	47	84	59
6	85	55	84	55	86	58	73	50	84	45	84	54	75	45	86	52	83	40	.....	.....	87	59	83	51	83	47	85	60
7	83	57	77	53	81	55	64	35	70	48	80	56	65	40	78	56	65	38	.....	.....	85	64	72	44	77	51	83	62
8	75	46	67	47	55	45	42	31	59	37	60	45	67	34	58	42	47	35	.....	.....	66	47	46	40	55	42	72	48
9	50	45	.....	42	48	40	59	26	56	36	48	38	60	26	48	40	52	27	.....	.....	49	43	50	41	42	38	51	45
10	50	29	.....	42	57	42	64	45	63	35	63	38	60	30	52	38	57	29	.....	.....	54	43	66	33	57	39	52	45
11	40	26	.....	25	44	28	45	26	53	31	48	36	53	30	44	40	42	20	.....	.....	48	29	48	19	42	25	47	30
12	35	21	34	21	34	21	55	29	59	22	53	21	52	15	46	20	46	10	.....	.....	42	21	53	12	37	20	38	26
13	40	13	38	15	43	18	74	38	74	31	58	28	70	26	50	24	62	27	.....	.....	48	25	69	26	46	18	43	26
14	55	23	42	26	56	30	75	52	72	41	71	34	74	30	55	24	65	39	.....	.....	61	36	70	38	57	31	56	36
15	55	30	55	30	62	37	73	36	68	30	70	32	75	28	66	35	67	28	.....	.....	64	36	68	31	61	31	61	38
16	54	27	50	23	56	30	60	39	62	29	57	33	60	30	60	34	61	24	.....	.....	60	34	58	34	56	26	59	37
17	55	26	40	23	58	36	56	37	64	29	65	40	60	32	50	32	52	28	.....	.....	52	47	64	34	58	36	50	42
18	58	27	48	20	50	33	52	28	51	26	56	34	62	34	50	30	48	28	.....	.....	52	33	52	31	48	30	51	34
19	56	26	52	25	53	27	61	31	53	30	62	27	66	30	48	30	60	28	.....	.....	50	28	46	28	52	20	51	34
20	52	28	51	40	58	43	72	37	77	36	63	40	70	21	60	36	70	30	.....	.....	55	43	77	37	56	42	53	44
21	60	34	53	38	67	42	74	40	73	30	75	29	72	20	50	40	70	21	.....	.....	74	41	73	27	69	35	72	48
22	65	36	45	32	16	33	67	35	62	36	68	42	78	22	63	30	60	35	.....	.....	61	37	61	32	52	36	51	36
23	65	30	40	33	42	34	70	29	69	35	62	28	72	19	55	35	65	18	.....	.....	47	35	65	29	45	30	42	37
24	52	32	49	32	64	33	74	36	78	32	79	35	76	20	70	33	65	33	.....	.....	64	30	78	34	65	28	59	35
25	50	30	57	30	63	37	75	30	68	26	72	35	73	19	66	30	70	24	.....	.....	66	39	65	28	62	32	64	42
26	53	34	48	23	53	38	65	35	61	30	62	30	78	30	60	32	58	22	.....	.....	59	38	61	37	53	37	56	45
27	54	32	38	25	54	31	72	37	67	31	65	28	75	32	60	36	63	25	.....	.....	63	34	61	32	52	36	51	36
28	63	22	49	19	54	27	79	40	78	24	75	25	80	34	77	34	80	30	.....	.....	64	30	72	28	60	23	57	32
29	72	40	68	36	73	43	77	43	82	32	79	40	78	35	76	51	78	33	.....	.....	79	50	75	35	73	47	78	46
30	75	42	66	33	68	41	64	34	68	30	72	38	80	24	72	40	66	22	.....	.....	79	56	67	38	68	40	76	56
31	48	42	49	39	53	45	55	32	54	43	52	40	81	29	52	44	50	34	.....	.....	74	49	52	42	51	39	71	52
Mns	61.9	35.4	56.6	34.5	60.9	39.0	67.1	37.8	69.6	34.8	68.3	38.1	72.3	30.1	64.3	39.2	64.9	30.5	.....	.....	66.0	41.8	67.4	35.5	60.9	35.6	63.2	43.9

Date	Iowa.				Kansas.				Missouri.																	
	Valentine, Nebr.		Clarinda, #		Sibley, #		Sioux City.		Colby.		Concordia.		Salina.		Topeka.		Wakeney.		Columbia.		Kansas City.		St. Louis.		Unionville, #	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	72	51	80	42	78	41	77	52	86	48	88	49	95	53	85	51	87	47	80	44	82	54	72	51	80	44
2	78	47	91	44	81	48	87	50	86	46	89	58	96	48	91	56	89	53	90	51	89	62	81	57	90	50
3	80	46	91	47	77	52	79	51	87	50	90	54	90	53	90	57	88	53	90	53	89	66	87	64	88	55
4	80	47	86	50	77	48	79	52	88	50	88	54	90	51	90	57	88	52	87	52	89	63	83	61	78	49
5	88	58	82	52	.....	49	83	59	86	52	88	55	94	45	88	57	86	54	81	54	83	59	76	55	81	50
6	86	55	87	52	84	.....	84	58	84	51	87	56	92	46	89	57	85	51	82	55	86	59	77	53	83	52
7	69	42	86	53	82	51	82	58	73	53	82	60	86	45	86	59	78	58	84	57	84	63	81	57	84	50
8	47	43	79	52	62	52	72	48	60	35	60	45	78	45	70	52	64	39	85	60	80	59	82	58	81	55
9	49	37	56	49	57	48	49	43	55	39	47	40	50	42	54	42	46	40	70	50	62	46	71	47	68	56
10	60	31	50	44	.....	45	52	44	70	35	61	41	62	39	51	41	69	38	50	44	50	42	55	49	50	46
11	44	16	40	38	.....	34	45	28	60	29	52	29	50	42	48	31	61	36	51	34	47	33	52	37	46	40
12	38	10	46	20	.....	22	33	22	57	19	51	25	55	24	48	27	57	19	42	26	47	28	42	32	38	25
13	55	22	50	24	40	14	41	17	77	30	51	33	62	33	59	34	73	30	57	25	57	34	60	33	45	22
14	62	37	58	27	49	15	54	29	74	45	70	40	74	38	67	39	75	39	62	29	63	38	54	37	50	26
15	61	31	64	32	58	29	61	37	72	44	68	44	72	37	67	40	71	38	64	36	66	43	62	40	60	32
16	59	24	62	30	55	25	56	32	61	33	61	37	72	40	63	41	62	38	62	33	59	40	61	46	62	36
17	55	30	47	35	50	25	56	35	66	33	54	47	66	41	62	45	64	37	71	46	62	45	64	44	60	40
18	45	32	35	32	50	27	49	34	51	29	52	38	66	42	53	41	53	35	47	40	50	41	51	44	56	36
19	52	34	53	27	54	23	52	31	44	28	47	38	47	40	52	41	45	36	52	40	52	39	56	41	55	25
20	74	37	53	29	49	25	57	43	72	31	59	44	55	45	58	45	60	40	60	46	59	45	62	47	58	30
21	70	31	74	41	62	41	67	44	73	30	74	37	78	34	76	43	75	32	73	47	73	47	73	54	70	45
22	48	26	50	37	40	33																				



Climatological Data for October, 1909.  
DISTRICT No. 7, LOWER MISSISSIPPI VALLEY.

ISAAC M. CLINE, District Editor.

GENERAL SUMMARY.

During the first week of the month the weather was warm throughout the district; the highest temperatures occurred on the 1st or 2d in the western and from the 4th to 6th in the eastern portion of the district, except in some localities where they were recorded from the 14th to 16th. A change to decidedly cooler took place about the 6th in the western and the 8th in the eastern portion of the district, culminating in unseasonably low temperatures and killing frosts over the northern and western portions of the district. The cool weather continued until the close of the month, except that some of the day temperatures were rather high. The lowest temperatures occurred generally on the 12th or 13th and from the 24th to 26th. The mean temperature was about the normal, or above, except over the western and extreme eastern portions of the district, where there was a deficiency. Monthly mean temperatures and departures from the normal for the various States and areas are reported as follows: Missouri area, 58.6°, +0.7°; Kansas area, 58.2°, 0.0°; Colorado area, 50.2°, +1.0°; New Mexico area, 53.9°, -0.5°; Texas area, 62.1°, +1.4°; Oklahoma, 62.0°, +0.1°; Arkansas, 63.0°, +1.1°; Tennessee area, 60.0°, +0.2°; Mississippi area, 64.5°, +0.7°; and Louisiana, 68.5°, +1.6°.

The precipitation occurred in the Colorado area mostly during the first decade, while over the remainder of the district there were two well-defined rainy periods; the first prevailed generally from the 6th to the 11th, and the second from the 17th to the 20th. The last decade of the month was practically without rain, except that showers occurred generally over the northern portion of the district on the last day of the month. There was a deficiency over the eastern portion of the district and over that portion lying between the ninety-fifth and ninety-seventh meridians, while between the ninety-third and ninety-fifth, and ninety-seventh and ninety-ninth meridians there was a general excess. Over the remainder of the district, the departures were irregular, being about the normal in some localities and below in others. Monthly amounts with departures from the normal, for the various States and parts of States, are reported as follows: Missouri area, 1.95, -0.44; Kansas area, 2.01, -0.12; Colorado area, 0.94, -0.27; New Mexico area, 1.52, +0.56; Texas area, 1.89, -0.67; Oklahoma, 2.19, -0.20; Arkansas, 2.15, -0.21; Tennessee area, 1.26, -1.14; Mississippi area, 1.00, -1.06; Louisiana, 2.09, -0.54.

TEMPERATURE.

The mean temperature was below the normal over that portion of the Colorado area lying to the east of the Front Range, the New Mexico area, southwestern Oklahoma, the northeastern portion of the Missouri area, and the eastern portions of the Tennessee and Mississippi areas, and was about normal or above elsewhere. The greatest excess in temperature, amounting to more than 3°, occurred over southeastern Louisiana; elsewhere the excess ranged from 0.2° to 2.9°. Over those portions of the district where the mean temperature was below the normal, the departures ranged from 0.1° in Colorado and New Mexico to 2.5° over southwestern Oklahoma. The highest monthly mean temperature was 76.7°, at Burnside, Ascension Parish, La., and the lowest was 38.3°, at Lake Moraine, El Paso County, Colo. The monthly maximum reached, or exceeded, 90° at some stations in each State in the district, except in the New Mexico area, and the maximum was above 95° at a large number of stations in Oklahoma, Arkansas, Louisiana, and the Texas and Kansas areas. The highest temperature recorded in the district was 99°, at Hartshorn, Pittsburg County, Okla., on the 1st. A maximum tempera-

ture of 98° was recorded at Bee Branch, Van Buren County, and Portland, Ashley County, Ark., on the 5th. The average of the daily maximums exceeded 80° at 1 station in Oklahoma, 2 stations in the Mississippi area, and at practically all stations in Louisiana. The lowest temperature recorded was -5° at Elizabethtown, Colfax County, N. Mex. Minimum temperatures of 32°, or lower, were recorded in all parts of the district except over the greater portion of Louisiana and at scattered stations in Oklahoma, Arkansas, and the Texas and Mississippi areas. Zero temperatures were recorded in the mountainous portions of the Colorado and New Mexico areas, and in the more elevated portions of these areas the monthly mean minimum was well below 32°. Killing frosts occurred on the 12th or 13th, except in Louisiana, the eastern portion of the Texas area, and southeastern Arkansas, and on the 25th frost occurred southward into Mississippi and northern Louisiana.

PRECIPITATION BY DRAINAGE AREAS.

*Arkansas River and tributaries.*—The precipitation was unevenly distributed over this drainage area. The amounts were generally light, except in central Kansas, north-central Oklahoma, and northwestern Arkansas. Over the Colorado area, the average for 31 stations was 0.9 inch, which is about 0.3 inch below the normal. More than 2 inches occurred at only 1 station and there was less than 0.5 inch at 4 stations. There was an increase in the precipitation from the Colorado line to the ninety-seventh meridian and the average amount deduced from the 33 stations in this area was 3.3 inches, which is about 0.2 inch above the normal. Six stations reported more than 3 inches and 5 stations less than 1 inch. Over the Cimarron Basin, the precipitation ranged from 0.38 inch over the headwaters to 5.05 inches over north-central Oklahoma. The average amount determined from 20 stations was 2.3 inches, which is about 0.5 inch above the normal. More than 4 inches occurred at 3 stations and only 2 stations reported less than 1 inch. Over the headwaters of the Canadian, in New Mexico, the precipitation ranged generally between 1 and 2 inches. The average amount determined from 26 stations was 1.7 inches, which is about normal. Over that portion of the Canadian Basin, from the Colorado line to its junction with the Arkansas, the precipitation was generally more than 2 inches. The average determined from 16 stations was 2.2 inches, which is about normal. The precipitation over the Neosho and Verdigris valleys and the Arkansas proper, from the ninety-seventh meridian eastward to the Arkansas line, was less than to the west and east of this area. The amounts ranged generally between 1.5 and 3 inches. The average amount deduced from the reports of 22 stations was 2.1 inches, which is slightly below the normal. In the Arkansas Basin, from Fort Smith to its junction with the Mississippi, the average was 3.3 inches, which is nearly 1 inch above the normal. There was a decided excess above Little Rock, but below that station there was a marked deficiency. Excessive precipitation (2.50 inches, or more in twenty-four hours) occurred as follows: Miami, Tex., Canadian watershed, 2.50 inches on the 18th; Dacoma and Okeene, Okla., Cimarron watershed, 2.80 and 2.60 inches, respectively, on the 18th.

*Red River and tributaries.*—Over this drainage area the precipitation was light, except in northeastern Texas and southwestern Arkansas and at a few stations in southwestern Oklahoma. From the headwaters to the ninety-seventh meridian, the monthly amounts ranged generally between 1 and 2 inches, and the average deduced from 22 stations was 1.5 inches, which is about 0.7 inch below the normal. Three stations reported more than 2 inches and 2 stations reported less

than one inch. From the ninety-seventh meridian to the Louisiana line the amounts were greater and ranged generally between 2 and 4 inches. The average amount determined from 18 stations in this area was 2.5 inches, which is slightly above the normal. Four stations reported less than 2 inches and 2 stations more than 4 inches. Below the Louisiana line the precipitation ranged from 1.35 inches to 4.10 inches, and the average amount deduced from 9 stations was 2.0 inches, which is about 0.9 inch below the normal.

*Mississippi south of St. Louis and small tributaries.*—Except in widely scattered localities, the precipitation was light throughout this drainage area. In the immediate Mississippi Valley, from St. Louis southward to the coastal plain, the precipitation reported from 41 stations averaged 1.3 inches, and exceeded 2 inches at only 5 stations. The greatest monthly amount was 2.87 inches at Corinth, Miss. Twelve stations reported less than 1 inch and 3 stations less than 0.5 inch. The precipitation was below the normal, except at 2 stations, and the average deficiency was about 1 inch. In the valley of the Meramec, the precipitation ranged from 0.37 inch to 3.03 inches and the average was 2 inches, which is about 0.5 inch below the normal. Over the valley of the White, the precipitation was unevenly distributed. The monthly amounts ranged from 0.51 inch over the upper portions of the basin to 4.31 inches at Mossville in the western portion, and the average was 1.8 inches. The precipitation over this drainage basin was above the normal over the western portion and decidedly below the normal elsewhere; the average deficiency was about 0.5 inch. Over the valleys of the Yazoo and Big Black the precipitation ranged from a trace to 1.89 inches. The average determined from the reports of 11 stations in the Yazoo Basin was 1 inch, which is about half the normal amount; 4 stations reported less than 0.5 inch. Out of 7 stations in the valley of the Big Black only 2 stations reported more than 1 inch and 3 stations reported less than half an inch; the average was 0.8 inch, which is 1.5 inches below the normal. In the valley of the Ouachita, the precipitation was more uniformly distributed than elsewhere in the lower Mississippi Valley. The monthly amounts ranged from 0.90 inch to 3.56 inches, and the average for 18 stations was 2.1 inches, which is 0.3 inch below the normal. There was a general deficiency over this drainage area, except in southwestern Arkansas, where there was an excess ranging from 0.56 inch to 1.22 inches.

*Louisiana coastal plain.*—The precipitation over this area ranged from 0.10 inch at Burrwood, Plaquemines Parish, to 3.70 inches at Audubon Park, New Orleans, Orleans Parish. The precipitation was below the normal over the entire coastal plain, except in Orleans Parish and the northern portion of Tangipahoa Parish. The deficiency averaged about 1 inch. The rainfall was excessive at 1 station, Audubon Park, where 3.41 inches fell on the 19th.

#### RIVERS.

The Arkansas and its tributaries were low throughout the month, except that there were freshets in some of the small streams in north-central Oklahoma and southern Kansas. At Little Rock, the highest stage was 1.1 feet at the opening of the month and the lowest was 0.3 foot from the 25th to 28th, in-

clusive. A slight rise was recorded at Little Rock at the close of the month. No material changes in the stages of the Red River were recorded. The stages at Arthur City ranged from 4.5 feet to 5.4 feet. At Fulton, Arkansas, from 4.8 feet to 5.4 feet; at Shreveport, La., from -4.4 feet to -3.5 feet; and at Alexandria, La., from -0.5 foot to 1.1 feet. A rise of 3.2 feet was recorded on the Ouachita at Camden on the 12th and 13th, otherwise changes in this stream were slight. The lower Mississippi changed very little. At Memphis there was a rise of 2.1 feet from the 18th to the 26th, but the stage at the close of the month, 6.7 feet, was 1.4 feet below that on the 1st. The above rise reached Helena on the 22d, Vicksburg on the 26th, Natchez on the 27th, and New Orleans on the 29th. The stages were lower at the close of the month than they were on the 1st, except at New Orleans.

#### NOTES.

There are several thousand acres of swamp land in southern Louisiana susceptible of reclamation. The increasing interest in the sugar and rice industries will make it necessary, in the near future, to prepare these lands for cultivation. Mr. A. M. Shaw, Expert in drainage investigations, U. S. Department of Agriculture, in a recent communication to this office, makes the following comments in this connection:

In all of the lands that are in need of drainage, a definite knowledge of the amount of water to be drained off during each month is important, but in the lands along the coast, where only artificial drainage is possible, a definite knowledge of the precipitation is an absolute necessity for the proper design of the drainage works. In connection with Prof. W. B. Gregory, of Tulane University, I have been making an especially detailed study of conditions on a few typical tracts, and in this work have established rain gages on each tract; in some cases, two gages have been placed on each plantation. It is not expected, however, that these separate gages will be maintained indefinitely, but as soon as the studies now under way have been kept up for a sufficient length of time to make deductions from them possible, the information obtained will be applied to other localities where the Department will have to depend entirely on the rainfall records which may be obtained from the Weather Bureau or other sources. As soon as the results of the investigations now being made are available for the use of the engineers of this territory, it is very probable that a much wider demand for data from your office will result. One reason that engineers (outside of those in the rice country) have made little use of the records of the Bureau heretofore is because of the difficulty of application of the data from the Bureau. With the additional information which it is hoped we will be able to develop, the records kept by the Weather Bureau will play an important part in the reclamation of the swamp lands of the State.

In this connection, it is interesting to note the wide variation in rainfall at points only 1 or 2 miles apart. In some cases there is a marked difference, not only in the daily but in the monthly precipitation.

Reports giving the daily discharges of the Arkansas River at Canon City, Colo., for July, August, September, and October have been furnished by the Water Resources Branch of the United States Geological Survey. These reports show a gradual decrease in the discharges from July 1 to August 14. The greatest discharge recorded during the four months occurred on August 18 and resulted from cloudbursts near the Royal Gorge. The heavy precipitation during the early part of September is shown in the increased discharge during the first decade of that month. The discharge diminished generally from September 10 to October 31. The area drained is 3,060 square miles and the run-off in acre-feet for July was 124,000; August, 73,800; September, 82,700; and October, 41,300.



TABLE 1.—Climatological data for October, 1909. District No. 7, Lower Mississippi Valley.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.			
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.			Number of cloudy days.		
Colorado.																						
Blaine	Baca	3,935	17	54.2	- 0.8	87	4	27	26	45	0.29	- 0.49	0.15	0.0	3	17	11	3	sw.	M. M. Meyers.		
Buena Vista	Chaffee	7,955	9																	M. D. Bowen.		
Calhan	El Paso	6,700	2	47.5		77	27	20	25	48	1.27		0.67	1.0	3	20	9	2	sw.	H. B. Rice.		
Canon City	Fremont	5,329	21	56.1		82	27	19	42	0.99		+ 0.19	0.58	0.0	5	15	15	1	e.	Thomas J. Tynan.		
Colorado Springs	El Paso	6,098	30	50.0	+ 1.7	76	2	24	25	44	0.57	- 0.11	0.41	0.0	4	21	6	4		Colorado College.		
Cripple Creek	Teller	9,396	9										0.98	11.5	4					F. G. Willis.		
Cuchara Camps	Huerfano	8,200											1.55	7.0	6	21	7	3	sw.	George A. Mayes.		
Eads	Kiowa	4,209	2	53.3		87	3	23	30	56	1.35		1.35	T.	1					W. H. Lauck.		
Fairview	Custer	9,500											1.25	23.8	5	21	5	5	e.	Elizabeth L. Gray.		
Florence	Fremont	5,185		55.2		86	17	25	9	45	0.55		0.40	0.0	2	24	0	7	e.	W. G. Fish.		
Garfield	Chaffee	9,510											1.10	0.31	6.0	6	22	7	1	Lloyd N. Felton.		
Glen Eyrie	El Paso	6,500	17	48.6	+ 0.4	81	2	17	9	51	0.51	- 0.41	0.42	T.	3	22	8	1	sw.	C. Nickell.		
Hamp	Elbert	5,400	16	46.4	- 0.7	78	27	18	25	50	0.85	+ 0.26	0.47	0.5	3	18	8	5	sw.	W. Hamp.		
Hermit Lake	Custer	10,000																		Jno. E. Graham.		
Hochne (near)	Las Animas	5,700	17	54.0	+ 2.4	87	4	23	9	53	0.25	- 0.79	0.25	T.	1	20	9	2	sw.	S. W. DeBusk.		
Holly	Prowers	3,380	14	55.4		95	2	26	27	57	0.76	+ 0.17	0.40	T.	3	22	6	3	sw.	R. I. Arneson.		
Lake Moraine	El Paso	10,265	15	38.3	+ 1.1	61	2	7	9	31	0.82	- 1.00	0.36	7.8	7	7	21	3	sw.	Joseph Strong.		
Lamar	Prowers	3,592	19	54.4	- 0.8	90	2	27	28	55	0.53	- 0.50	0.43	0.0	2	20	10	1	se.	J. T. Lawless.		
Las Animas	Bent	3,899	41	54.8	+ 1.8	90	2	27	24	55	1.46	+ 0.75	0.78	0.0	2	22	2	7	e.	F. M. Tague.		
La Veta Pass	Costilla	9,000											1.59	0.63	13.2	4	18	5	8	sw.	Norvin B. Lively.	
Leadville	Lake	10,248	13	38.8	+ 1.8	65	2	12	8	35	0.81	- 0.08	0.34	T.	6				n.	U. S. Weather Bureau.		
Limon (near)	Elbert	5,360	2	49.6		81	2	25	97	41	1.20		0.84	T.	3	28	1	2	ne.	John Lesher.		
Marshall Pass	Saguache	10,846	6										0.60	17.0	5	23	5	3	w.	W. D. Lillard.		
North Lake	Las Animas	8,700											1.06	0.38	8.5	6	20	6	5	w.	Guy H. Crane.	
Pueblo	Pueblo	4,734	21	52.2	- 0.1	82	2	26	19	48	0.25	- 0.46	0.16	T.	3	18	8	5	nw.	U. S. Weather Bureau.		
Rockyford (near)	Otero	4,177	20	53.4	+ 0.6	89	3	24	23	60	0.90	0.00	0.83	0.0	2	29	1	1	w.	P. K. Blinn.		
St. Elmo	Chaffee	9,500											1.47	T.	6	25	5	1	w.	Daniel Clark.		
Salida	do	7,035	11	48.1	+ 1.1	80	2	14	12	32	0.56	- 0.60	0.28	T.	3	26	2	3	w.	M. D. L. Buell.		
Santa Clara	Huerfano	8,250	14	48.0	+ 3.6	73	2	12	9	48	1.10	- 1.17	0.67	5.0	4	13	17	1		Lincoln Morris.		
Sheridan Lake	Kiowa	4,065	8	55.1		86	4	22	25	53	0.55		0.45	0.0	2	28	0	3	sw.	Howard Gamble.		
Stonewall	Las Animas	8,000	3										0.68	0.34	3.0	5	21	6	4		J. W. Shouse.	
Trinidad	do	5,994	14										0.22	T.	2	17	12	2		Mrs. Maggie Butler.		
Victor (near)	Teller	10,106	5	45.6		68	2	14	9	33	1.02	- 0.97	0.12	T.	3	25	5	1	n.	Fred Jones.		
Vilas	Baca	3,935	19										1.29	+ 0.55	0.56	0.0	4	20	7	4	sw.	Carrie Konkel.
Westcliffe	Custer	7,864	15	45.6	+ 2.0	75	17	- 4	9	52	1.10	- 0.16	0.40	6.0	4	15	12	4	sw.	Zack Jordan.		
Winfield	Chaffee	9,765											0.52	0.28	3.5	4	12	15	4	sw.	John G. Payne.	
Wortman	Lake	11,250	9										2.11	0.90	34.1	6	23	3	5	nw.	George C. Wortman.	
New Mexico.																						
Abbott	Mora	5,771											1.12	0.43	T.	4	26	3	2	w.	Agt. E. P. & S. W. Ry.	
Albert	Union	4,700	19	57.8	- 0.1	86	14	35	9	44	2.16	+ 0.27	1.50	0.0	4	22	2	7	sw.	Andrew Knell.		
Arch (near)	Roosevelt			59.8		85	14	30	27	39									w.	Wm. A. Elliott.		
Aurora	Colfax	8,849											2.11	1.85	16.8	4	12	15	4	nw.	Miss Juanita Lucero.	
Bell Ranch	San Miguel	4,500	5	57.3		89	1	31	24	52	1.93		1.20	0.0	4	22	8	1	sw.	C. M. O'Donnell.		
Black Lake	Colfax	8,348											1.19	0.80	0.8	5	21	6	4	w.	Ralph T. Martinez.	
Cabeza	San Miguel	5,406											2.02	1.45	0.0	4	17	8	6	se.	Agt. E. P. & S. W. Ry.	
Campana	do	4,493											3.09	2.01	0.0	5	22	2	7	w.	Do.	
Chacon	Mora	9,000											1.13	0.80	8.0	3	17	10	4	w.	Alfred Lucero.	
Cimarron (near)	Colfax	6,385	4	50.7		80	16	23	97	52	0.49		0.27	1.0	4	14	12	5	e.	Wm. French.		
Clayton	Union	5,178	5	55.0		80	1	29	9	44	1.11		0.57	T.	3	20	6	5	nw.	Dr. W. H. Chilton.		
Cuervo	Guadalupe	4,849		59.4		85	1	34	9	37	0.86		0.71	0.0	5	22	5	4	sw.	Agt. E. P. & S. W. Ry.		
Dawson	Colfax	6,396											1.00	0.50	0.0	2	20	3	8		Do.	
Dorsey (near)	do	6,000	8																	Geo. T. Lambert.		
Elizabethtown	do	8,465	3	41.1		71	1	- 5	9	52	1.33		0.43	9.0	5	21	8	2	w.	Miss Mabel Carrington.		
Fort Union	Mora	6,835	40	48.0	- 2.5	80	1	13	9	50	1.45	+ 0.40	0.90	4.0	5	23	5	3	sw.	M. C. Needham.		
Hayden	Union	4,444		53.2		78	1	30	21	22	1.51		1.12	0.0	3	12	11	8	sw.	George L. Cook.		
Lake Alice	Colfax	7,160											0.42	4.0	4					Raton Water Co.		
Logan	Quay	3,851	3	58.0		89	16	29	27	50	2.85		1.50	0.0	5	24	3	4	s.	John B. Reneau.		
Los Alamos	San Miguel	6,789	3										0.56	T.	5					Wm. Frank, sr.		
Maxwell (near)	Colfax	5,894	3										0.68	0.48	0.0	2				D. N. Jackson.		
Melrose	Curry	4,400	1	57.1		88	16	26	12	49	T.		T.	0.0	0	26	2	3	sw.	Miss Lois E. Porter.		
Miami Ranch	Colfax	6,000	2	50.6		80	17	20	9	51	0.96		0.59	1.0	4	22	5	4	sw.	Farmers' Devel. Co.		
Montoya	Quay	4,335											1.00	0.80	0.0	3	24	0	7	w.	Agt. E. P. & S. W. Ry.	
Nara Visa	do	4,225	4	57.6		85	16	33	12	41	2.86		1.48	0.0	5	21	5	5	s.	Willard Belknap.		
Raton	Colfax	6,660	12	52.3	+ 1.1	80	2	26	9	44	1.14	+ 0.44	0.45	1.0	9	22	5	4	s.	Prof. R. C. Crum.		
Rocklaido	San Miguel	8,200	6	46.2		75	17	6	9	50	1.39		0.45	8.0	9	15	12	4	n.	Chas. F. Rudolph.		
Roy	Mora	5,884											1.17	0.0	3	21	0	10	n.	Agt. E. P. & S. W. Ry.		
San Jon	Quay	4,200	3	59.4		88	16	31	12	37	2.06		1.21	0.0	6	20	5	6	sw.	Jesse T. White.		
Salano (1)	Mora	5,622		52.2		82	1	30	97	47	2.36		1.37	T.	5	23	4	4	sw.	F. M. Hughes.		
Salano (2)	do	5,622											1.29	T.	4	16	9	6	sw.	Agt. E. P. & S. W. Ry.		
Springer	Colfax	5,837	14	50.0		82	1	20	29	55	1.00		0.50	0.0	4	24	4	3	n.	Agt. A. T. & S. F. Ry.		
Taylor	do	5,661											1.80	T.	3	25	1	5	nw.	Agt. E. P. & S. W. Ry.		
Tremontina	San Miguel		2										1.									

TABLE 1.—Climatological data for October, 1909. District No. 7—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.			Number of cloudy days.
Texas—Cont'd.																				
Ochiltree.	Ochiltree.		1	59.6		87	13	30	11	41	2.35		1.85	0.0	2					S. T. Allen.
Pampa.	Gray.	3,226											1.85	0.0	2					B. E. Finley.
Paris.	Lamar.	592	20	58.2	+ 2.6	95	17	39	10	43	1.74	- 0.65	1.07	0.0	3	21	0	8	s.	N. O. Enloe.
Plemons.	Hutchinson.		2	57.4		89	2	26	27	50	2.28		1.80	0.0	3	21	5	5	n.	C. S. Solomon.
Quanah.	Hardeman.	1,563	4	64.0		95	18	36	12	53	1.13		0.90	0.0	2	22	2	7	s.	E. E. Miller.
Sherman.	Grayson.	745	16	67.4	+ 1.0	89	5	42	24	38	2.01	- 1.23	1.32	0.0	3	24	1	6	s.	R. A. Gibbs.
Sulphur Springs.	Hopkins.	530	17	68.3	+ 1.5	93	17	43	10	39	5.09	+ 1.68	4.00	0.0	3	18	10	3	s.	W. B. Baxter.
Texline.	Dallam.	4,694	4								1.30		1.30	T.	1					Agt. Ft. W. & D. C. Ry
Tulia.	Swisher.	3,501	11	58.4		90	13	23	12	55	1.65		1.52	0.0	3	15	14	2	s.	Lou Mulhall.
Wichita Falls.	Wichita.	958	4								1.50		1.50	0.0	1	26	0	5	s.	J. B. Nicholson.
Kansas.																				
Anthony.	Harper.	1,329	12	59.1		93	4	25	12	45	3.64	+ 1.37	1.29	0.0	7	17	8	6	sw.	R. H. Beebe.
Ashland.	Clark.	1,951	2	58.4		90	17	31	13	49	2.92		1.00	0.0	10	20	4	7	n.	C. W. Carson.
Burlington.	Coffey.	1,010	16	58.2	- 1.1	94	1	25	12	46	2.28	- 0.14	1.03	0.0	5	17	7	7	s.	A. W. Maxwell.
Chanute.	Neosho.	940	5	60.8		94	1	25	12	45	1.51		0.90	0.0	3	15	12	4	s.	Chase W. Brown.
Cimarron.	Gray.	2,700	3	55.8		90 <sup>b</sup>	2	27 <sup>b</sup>	12 <sup>b</sup>	49 <sup>b</sup>	0.88		0.35	T.	5	17	6	6	se.	Fred Mallonee.
Coldwater.	Comanche.	2,090	11	58.8		88	17	27	12	40	1.32	- 0.43	0.51	T.	6	21	3	7	s.	J. L. Stanley.
Columbus.	Cherokee.	895	19	59.6	+ 0.7	90	27	24	12	38	3.05	+ 0.02	1.55	0.0	5	21	1	9	sw.	O. E. Skinner.
Coolidge.	Hamilton.	3,346	13	54.2	+ 1.0	90	2	25	24	61	1.11	+ 0.12	0.69	0.0	3	18	8	5	se.	W. R. Padley.
Cottonwood Falls.	Chase.	1,234	5	57.9		92	17	21	12	51	1.35		0.50	0.0	7	17	6	8	sw.	E. B. Greene.
Council Grove.	Morris.	1,191		59.6		90	17	26	27	45	1.02		1.02	0.0	1	29	0	2	n.	Geo. W. Cleek, jr.
Cunningham.	Kingman.	1,690	21	58.2	+ 0.4	90 <sup>a</sup>	17	26	12	45 <sup>a</sup>	2.75	+ 0.64	1.25	0.0	4	19	3	9	s.	W. H. Morton.
Dodge City.	Ford.	2,513	35	56.2	+ 1.5	88	2	26	12	39	0.92	- 0.48	0.32	T.	8	19	5	7	s.	U. S. Weather Bureau
El Dorado.	Butler.	1,291	7	58.9		90	5	24	12	40	2.36		0.88	0.0	5	21	3	7	s.	W. Y. Miller.
Ellinwood.	Barton.	1,788	15	57.5	- 0.2	90	3	23	12	42	2.40	+ 0.44	1.47	T.	8	13	11	7	nw.	Martin Musil.
Emporia.	Lyon.	1,138	25	58.4	+ 1.0	93	1	25	12	45	1.88	- 0.91	1.04	0.0	4	16	9	6	s.	W. H. Boyles.
Eureka.	Greenwood.	1,093	11	58.2		92	17	24	12	48	2.00	- 1.05	0.80	0.0	5	19	7	5	s.	T. C. Peffer.
Fall River.	do.	925	13	59.2		94	1	25	12	49	1.54	- 0.58	0.70	0.0	6	20	4	7	s.	J. McDaniel.
Fargo.	Seward.										0.89		0.50	T.	5	16	6	9	s.	Frank Swink.
Fredonia.	Wilson.	864	6	62.0		93	17	22	12	51	1.95		0.77	0.0	6	21	2	8	s.	B. W. Holmes.
Garden City.	Finney.	2,836	15	56.0	+ 0.4	90	2	26	11	51	0.75	- 0.32	0.30	T.	4	20	4	7	s.	B. F. Stocks.
Great Bend.	Barton.	1,850																		J. A. Pritchard.
Greensburg.	Kiowa.	2,235	2	56.7		88	17	25	12	42	3.37		2.48	T.	7	20	5	6	s.	C. C. Raymond.
Grenola.	Ellis.	1,116	22	58.2	- 1.1	92	17	22	12	45	2.17	- 0.56	0.72	0.0	6	21	4	6	s.	R. M. Lawyer.
Howard.	do.	1,112	2								2.96		1.00	0.0	4	22	3	6	sw.	J. W. Eby.
Hugoton.	Stevens.	5	56.6			89	2	23	29	59	2.27		1.55	0.0	3	21	0	10	s.	J. A. Firmin.
Hutchinson.	Reno.	1,535	19	58.0	- 0.8	92	17	24	12	45	2.85	+ 0.26	1.45	0.0	5	22	2	7	nw.	E. S. Webster.
Independence.	Montgomery.	816	37	61.0	+ 0.8	92	4	25	12	41	2.02	- 0.90	0.62	0.0	6	17	7	7	s.	J. M. Altaffer.
Iola.	Allen.	984	3	58.1		91	1	26	12	39	1.90		0.75	0.0	7	17	4	10	s.	U. S. Weather Bureau
Jetmore.	Hodgeman.	2,268	8	55.8		90	2	20	12	47	0.81		0.40	T.	4	15	12	4	sw.	James Aikin.
Kingman.	Kingman.	1,504	1	59.5		92	4	25	12	45	2.72		0.97	0.0	6	21	4	6	sw.	B. B. Anawalt.
La Crosse.	Rush.	2,061	7	55.4		90 <sup>a</sup>	27	20 <sup>a</sup>	12	45 <sup>a</sup>	1.54		0.94	T.	4	24	2	5	se.	Rodney Torrey.
Lakin.	Kearney.	2,993	19	54.0	- 2.0	88	17	26	12	52	0.86	- 0.07	0.60	0.0	4	14	10	7	se.	C. H. Longstreth.
Larned.	Pawnee.	2,090	5	56.6		90	27	25	12	40	1.86		0.94	T.	7	21	3	7	s.	H. H. Wolcott.
Lebo.	Coffey.	1,138	23	57.8	+ 0.5	90 <sup>a</sup>	27	26 <sup>a</sup>	12	41 <sup>a</sup>	1.50	- 1.22	0.65	0.0	6	20	5	6	s.	J. J. Bowman.
Le Roy.	do.	990									1.34		0.73	0.0	5	24	4	3	s.	F. W. Schmitt.
Liberal.	Seward.	2,843	2	57.2		89	2	29	27	48	1.38		0.73	0.0	6	20	0	11	se.	R. T. Nichols.
Mackaville.	Stafford.	2,032	16	56.7	+ 0.4	88	17	25	12	39	2.26	+ 0.07	1.25	T.	5	19	3	9	s.	Mrs. Nella Poling.
McPherson.	McPherson.	1,495	19	59.2	+ 1.2	93	3	23	12	40	2.17	- 0.55	1.22	0.0	4	22	4	5	sw.	Ed. F. Haberlein.
Madison.	Greenwood.	1,074	8	58.0		94 <sup>d</sup>	1	23 <sup>d</sup>	12	53 <sup>d</sup>	1.33		0.87	0.0	3	12	11	4	se.	C. A. David.
Marion.	Marion.	1,310	15	58.4	- 0.5	92	17	24	12	44	1.32	- 0.96	0.73	0.0	4	18	9	4		D. D. McIntosh.
Medicine Lodge.	Barber.	1,475	16	57.6	- 1.8	92	17	26	12	51	2.82	+ 0.93	1.13	0.0	8	22	3	6	s.	S. P. Garrison.
Medora.	Reno.	1,480																		M. L. Rickenbrode.
Mt. Hope.	Sedgwick.	1,410	12								1.70	- 0.50	0.85	0.0	4	19	6	6	s.	H. N. Renfrew.
Neosho Rapids.	Lyon.	1,092	4								1.27		0.70	0.0	3	22	0	9	s.	J. E. McLeod.
New City.	Ness.	2,260	12																	J. K. Baird.
Newton.	Harvey.	1,454	12	60.2	+ 0.9	94	4	23	12	41	0.98	- 0.99	0.70	0.0	5	21	5	5	s.	C. F. Walden.
Norwich.	Kingman.	1,496	13	60.5	+ 0.5	91	17	27	12	36	3.87	+ 0.52	1.09	0.0	6	16	9	6	s.	N. I. Farris.
Oswego.	Labette.	899	18	61.7	+ 1.4	93	17	25	12	46	2.20	- 0.84	0.64	0.0	4	16	8	7	se.	Jas. M. Currgan.
Pratt.	Pratt.	1,950	14	57.1 <sup>b</sup>	- 1.5	90 <sup>b</sup>	5	26 <sup>b</sup>	12	45 <sup>b</sup>	1.98	- 0.48	1.10	0.0	6	21	2	8	s.	E. H. Ellsworth.
Rome.	Sumner.	1,218	12	59.1	- 0.1	91	1	25	12	49	3.46	+ 1.01	1.27	0.0	8	19	5	7	s.	D. M. Adams.
Sedan.	Chautauqua.	834	24	61.6	+ 1.8	92	2	20	12	45	1.64	+ 0.94	0.62	0.0	6	22	4	5	s.	A. Y. Buckles.
Toronto.	Woodson.	1,040	12	58.5	- 0.5	95	17	24	12	50	2.15	- 0.21	1.05	0.0	5	22	0	9	s.	M. A. Webb.
Ulysses.	Grant.	3,027	15	56.4 <sup>a</sup>	- 0.8	91 <sup>a</sup>	2	29 <sup>a</sup>	10	54 <sup>a</sup>	1.13	+ 0.30	0.86	0.0	3	19	6	6	sw.	T. W. Marshall.
Walnut.	Crawford.	940	7	60.0		96	4	25	12	46	2.88		0.87	0.0	5	21	4	6	sw.	R. C. Harlan.
Wichita.	Sedgwick.	1,377	22	59.0	+ 0.2	89	5	28	12	32	2.95	+ 0.65	1.12	0.0	7	14	10	7	s.	U. S. Weather Bureau.
Winfield.	Cowley.	1,124	12	58.5	- 0.9	87	17	25	12	37	2.64	+ 0.25	1.20	0.0	4	21	3	7	s.	M. B. Light.
Yates Center.	Woodson.	1,068	16	59.6	+ 1.2	93	1	22	12	50	2.9									



TABLE 1.—Climatological data for October, 1909. District No. 7—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.
Oklahoma—Cont'd.																			
Hennessey.....	Kingfisher.....	1,166	15	62.0	- 1.3	95	1	33	12	45	3.92	+ 1.58	1.50	0.0	3	16	11	4	W. W. Parks.
Hobart.....	Kiowa.....	1,356	6	62.4	.....	88	4	38	10	40	1.71	.....	0.85	0.0	3	24	4	3	Roy Benedict.
Holdenville.....	Hughes.....	900	9	63.0	.....	94	5	33	24	46	0.91	.....	0.46	0.0	2	29	0	12	Miss M. Rutherford.
Hooker.....	Texas.....	2,999	4	54.8	.....	84	3	31	27	45	1.57	.....	0.90	0.0	5	17	12	12	J. N. Kelly.
Hurley.....	Cimarron.....	.....	1	54.1	.....	90	30	28	25	52	2.00	.....	0.80	T.	4	21	5	5	C. W. Myers.
Idabel.....	McCurtain.....	474	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Dr. W. B. McCaskill.
Jefferson.....	Grant.....	1,062	16	59.9	+ 0.5	90	1	30	12	44	4.43	+ 2.02	1.55	0.0	4	21	4	6	J. M. Maddy.
Kenton.....	Cimarron.....	4,000	10	55.7	- 0.2	89	1	30	23	49	1.05	+ 0.13	0.40	T.	4	22	1	8	L. A. Wikoff.
Kingfisher.....	Kingfisher.....	1,046	12	63.4	+ 0.1	95	5	36	10	45	2.41	- 0.21	2.04	0.0	3	19	8	4	J. C. Cross.
McAlester.....	Pittsburg.....	698	17	65.0	.....	92	14	35	24	44	1.40	- 2.38	1.04	0.0	2	18	1	12	Wm. Noble.
McComb.....	Pottawatomie.....	1,200	15	62.1	+ 0.3	91	5	32	24	45	2.50	- 0.05	1.10	0.0	3	20	9	2	Jas. E. McNair.
Mangum.....	Greer.....	1,585	17	60.6	- 2.5	90	3	37	12	45	3.17	+ 1.29	1.78	0.0	4	28	0	3	Wade N. Johnson.
Marlow.....	Stephens.....	1,292	9	61.8	+ 1.0	92	4	38	24	46	0.88	- 1.50	0.35	0.0	4	24	1	6	W. B. Anthony.
Meeker.....	Lincoln.....	1,030	16	61.6	+ 0.2	95	6	32	24	52	1.10	- 0.99	0.60	0.0	3	21	3	7	Dr. John H. Baugh.
Muskogee.....	Muskogee.....	614	11	64.5	+ 2.2	95	2	32	12	42	2.10	- 1.42	1.15	0.0	3	17	6	8	Prof. E. N. Collette.
Mutual.....	Woodward.....	.....	3	61.0	.....	91	2	35	10	47	3.34	.....	2.35	0.0	4	21	4	6	Thos. Martin.
Neola.....	Caddo.....	1,500	4	62.8	.....	91	4	36	12	40	2.08	.....	1.14	0.0	3	25	3	3	R. M. Schooling.
Newkirk.....	Kay.....	1,149	13	61.9	+ 0.2	95	3	33	12	42	2.73	+ 0.46	0.91	0.0	5	21	5	5	P. H. Allright & Co.
Norman.....	Cleveland.....	1,171	16	64.1	+ 1.2	95	14	33	10	53	1.80	- 0.48	1.10	0.0	4	16	10	5	Walter H. Meier.
Okeene.....	Blaine.....	1,194	6	61.6	.....	92	1	35	10	42	4.67	.....	2.60	0.0	4	21	5	5	Dr. L. H. Murdock.
Oklahoma.....	Oklahoma.....	1,247	20	62.3	+ 1.0	90	1	36	24	55	1.73	- 0.08	1.41	0.0	4	19	6	6	U. S. Weather Bureau.
Okmulgee.....	Okmulgee.....	752	7	62.2	.....	94	5	28	24	57	1.89	.....	0.92	0.0	3	18	5	5	J. L. Maynard.
Pauls Valley.....	Garvin.....	880	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	A. M. Foss.
Pawhuska.....	Osage.....	918	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	R. C. Block.
Perry.....	Noble.....	1,060	12	63.0	+ 0.6	94	1	34	24	42	2.86	+ 0.16	1.33	0.0	4	22	3	6	J. A. Douglas.
Ravia.....	Johnson.....	796	8	63.6	.....	95	5	36	10	46	2.05	.....	0.88	0.0	4	24	2	5	R. G. Guptill.
Sac and Fox Agency.....	Canadian.....	900	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	D. J. Henderson.
Shawnee.....	Pottawatomie.....	1,041	9	62.6	.....	93	1	33	24	46	1.71	.....	1.13	0.0	4	22	2	7	Neal R. Clark.
Snyder.....	Kiowa.....	1,356	3	64.2	.....	91	14	37	24	45	1.42	.....	0.75	0.0	3	23	5	3	Dr. W. G. Woodard.
Stillwater.....	Payne.....	880	17	60.6	- 1.0	92	1	34	24	47	2.17	- 0.31	1.11	0.0	5	23	1	7	John M. Speidel.
Supply.....	Woodward.....	.....	2	55.3	.....	89	2	30	19	43	2.54	.....	2.38	0.0	3	20	8	3	A. H. Trimbo.
Temple.....	Comanche.....	925	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	G. F. Fitch.
Tulsa (1).....	Tulsa.....	700	21	62.1	.....	94	1	30	24	47	1.55	- 1.59	0.67	0.0	4	25	2	3	William Hall.
Tulsa (2).....	do.....	702	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Miss Pearl E. Towers.
Vinita.....	Craig.....	698	6	61.7	.....	95	1	25	12	49	2.40	.....	0.80	0.0	6	16	6	9	Lyman Bros.
Wagoner.....	Wagoner.....	588	13	63.2	- 0.2	94	3	29	24	41	2.10	- 0.88	0.79	0.0	5	20	3	8	S. L. Hatfield.
Waukomis.....	Garfield.....	1,258	13	61.6	- 1.9	94	4	34	13	45	4.62	+ 1.84	1.65	0.0	5	20	6	5	R. C. Shades.
Weatherford.....	Custer.....	1,659	8	63.8	.....	91	3	38	26	42	3.15	.....	1.41	0.0	5	22	3	6	M. D. Reed.
Webbers Falls.....	Muskogee.....	479	11	61.6	0.0	94	6	29	13	48	1.46	- 1.71	0.60	.....	4	14	12	5	B. D. Boulinau.
Whiteagle.....	Kay.....	945	4	63.5	.....	93	1	28	12	42	2.36	.....	0.89	0.0	6	24	6	1	J. M. Dankwardt.
Woodward.....	Woodward.....	.....	1	59.4	.....	89	16	32	10	45	2.95	.....	2.40	0.0	4	23	1	7	R. A. Boyle.
Missouri.																			
Belle.....	Maries.....	17	60.1	+ 0.3	89	3	24	13	50	0.37	- 2.04	0.22	0.0	2	11	7	4	A. J. Wofford.	
Birehtree.....	Shannon.....	1,200	15	59.0	+ 1.2	93	4	25	13	39	1.88	- 0.16	0.95	0.0	2	19	4	5	V. H. Kirkendall.
Cape Girardeau.....	Cape Girardeau.....	346	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	D. L. Albert.
Caruthersville.....	Pemiscot.....	18	61.5	+ 2.0	95	4	30	12	45	2.36	+ 0.16	1.23	0.0	4	24	0	7	H. E. Averill.	
Dean.....	McDonald.....	10	60.0	- 0.7	94	3	24	12	50	1.12	+ 1.11	1.83	0.0	7	20	1	8	H. E. Dean.	
Doniphan.....	Ripley.....	440	5	57.6	.....	88	3	25	13	42	0.75	.....	0.57	0.0	2	19	2	9	W. W. Martin.
Farmington.....	St. Francois.....	889	2	53.6	.....	88	3	26	13	41	2.46	.....	0.77	T.	5	17	0	9	Miss Helen Montgomery.
Gano.....	Dent.....	5	58.8	.....	91	4	28	12	41	1.88	.....	.....	0.80	0.0	5	19	4	8	A. C. Leech.
Goodland.....	Iron.....	900	4	55.3	.....	89	3	21	13	43	1.94	.....	1.08	0.0	5	20	3	8	F. M. Adams.
Greenville.....	Wayne.....	14	59.2	+ 1.4	96	3	23	13	53	0.75	- 1.14	0.75	0.0	1	19	12	0	A. G. Templeton.	
Ironton.....	Iron.....	925	31	55.0	- 0.8	90	3	21	13	42	0.88	- 1.85	0.40	T.	4	18	4	9	W. H. Delano.
Jackson.....	Cape Girardeau.....	458	18	58.5	+ 1.9	91	3	25	13	42	1.14	- 1.63	0.78	T.	5	16	8	7	L. M. Bean.
Joplin.....	Jasper.....	979	30	62.8	.....	90	3	28	12	31	2.83	- 0.31	1.40	0.0	3	23	1	7	Miss Elizabeth Russum.
Koshkonong.....	Oregon.....	911	9	61.7	.....	92	3	30	13	34	1.38	.....	0.80	0.0	4	19	10	2	J. W. Hitt.
Lamar.....	Barton.....	964	28	60.2	+ 1.6	95	4	25	12	45	1.74	- 1.37	0.76	0.0	3	20	3	8	E. H. Adams.
Marble Hill.....	Bollinger.....	420	16	57.8	+ 0.4	91	4	28	12	44	1.15	- 1.04	1.15	0.0	1	20	10	1	A. F. Hendricks.
Marshfield.....	Webster.....	1,492	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	O. P. Keeler.
Mt. Vernon.....	Lawrence.....	1,480	33	59.6	+ 0.3	91	2	27	12	45	3.69	+ 0.38	1.33	0.0	7	19	6	6	Dr. O. H. Brown.
Neosho.....	Newton.....	1,023	25	59.6	+ 0.4	92	1	25	12	47	2.92	- 0.27	1.36	0.0	8	18	3	10	R. D. Dean.
Oakfield.....	Franklin.....	793	17	57.2	- 1.6	89	3	26	13	37	3.23	+ 0.82	1.75	0.0	8	13	10	8	E. E. Steiner.
Olden.....	Howell.....	1,246	19	59.0	+ 0.2	91	4	28	12	42	2.57	+ 0.23	1.70	0.0	2	19	7	5	J. D. Evans.
Perryville.....	Perry.....	582	1	52.2	.....	81	7	21	13	42	0.10	.....	0.10	0.0	1	14	0	12	S. L. Cayton.
Poplar Bluff.....	Butler.....	343	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	E. C. Thomas.
Sikeston.....	Scott.....	328	14	60.1	+ 0.7	90	3	27	13	41	1.27	- 1.19	1.10	0.0	3	22	2	7	A. A. Harrison.
Springfield.....	Greene.....	1,350	22	59.4	+ 2.1	90	3	27	12	32	2.29	- 0.51	1.43	0.0	8	20	5	6	U. S. Weather Bureau.
Steelville.....	Crawford.....	1,746	12	58.0	.....	90	3	23	13	56	1.99	- 0.21	0.81	0.0	4	22	3	6	Edwin Humphrey.
Willow Springs.....	Howell.....	1,300	10	58.8	+ 1.3	94	4	24	13	42	3.03	+ 0.72	1.						

## MONTHLY WEATHER REVIEW.

OCTOBER, 1909

TABLE 1.—Climatological data for October, 1909. District No. 7—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		
<b>Arkansas—Cont'd.</b>																				
Calico Rock.	Izard	361	5	65.3	+ 1.9	96	5	33	25	45	0.74	— 0.24	0.54	0.0	3	21	12	3	se.	W. H. Stoner.
Camden.	Ouachita.	158	24	67.0	—	97	6	39	24	45	4.50	—	0.96	0.0	5	21	5	3	sw.	R. H. Quarterman.
Centerpoint.	Howard	171	5	61.8	+ 0.7	93	5	32	13	41	0.54	— 0.26	0.74	0.0	4	21	5	3	s.	J. M. Huddleston.
Clarendon.	Monroe	309	26	60.4	+ 1.6	93	4	26	13	43	1.28	— 1.19	1.24	0.0	3	18	8	5	s.	Mrs. B. E. Bishop.
Conway.	Faulkner	293	17	62.4	—	96	3	34	13	53	3.38	—	1.08	0.0	3	21	6	4	s.	G. H. Burr.
Corning.	Clay	330	23	61.7	+ 1.5	92	4	29	13	41	2.92	— 0.03	1.76	0.0	2	21	6	4	s.	Jacob Brobst.
Dardanelle.	Yell	1,175	28	59.2	—	91	5	28	13	44	4.00	—	1.62	0.0	4	17	11	3	s.	A. Bernard.
Dodd City.	Marion	8	8	62.4	—	92	4	29	13	42	0.94	—	0.94	0.0	1	21	1	8	s.	Neal Dodd.
Dutton.	Madison	265	3	64.8	—	92	5	36	25	39	1.59	—	1.24	0.0	3	22	1	8	sw.	T. S. Williamson.
Earl.	Crittenden	3	3	63.2	—	92	6	31	13	48	0.32	—	0.32	0.0	1	21	8	2	sw.	W. J. Moss.
Eldorado.	Union	265	5	59.6	+ 3.9	94	3	35	28	35	3.33	+ 0.58	1.95	0.0	4	13	10	8	sw.	Fred A. Babb.
England.	Lonoke	3	8	63.2	—	92	6	31	13	48	0.32	—	0.32	0.0	1	21	8	2	sw.	J. C. Chenault.
Eureka Springs.	Carroll	481	27	63.9	+ 2.2	96	4	36	13	38	3.83	+ 1.00	1.81	0.0	6	22	5	4	sw.	Jas. T. Pomeroy.
Fayetteville.	Washington	1,451	20	61.8	+ 0.6	91	3	31	13	43	0.70	— 1.71	0.53	0.0	3	18	6	7	sw.	University of Arkansas.
Fort Smith.	Sebastian	264	5	63.0	+ 0.7	93	4	32	13	43	0.62	— 1.72	0.52	0.0	2	23	0	8	sw.	U. S. Weather Bureau.
Fulton.	Hempstead	643	11	61.8	+ 0.6	91	3	31	13	43	0.70	— 1.71	0.53	0.0	3	18	6	7	sw.	B. C. Logan.
Hardy.	Sharp	182	24	63.0	+ 0.7	93	4	32	13	43	0.62	— 1.72	0.52	0.0	2	23	0	8	sw.	C. A. Caywood.
Helena (1).	Phillipi	182	8	61.2	—	92	6	30	13	46	2.90	—	2.00	0.0	3	27	3	1	nw.	Robert Kyle.
Helena (2).	do.	690	3	66.0	—	91	5	33	25	41	1.68	—	1.52	0.0	3	21	6	0	sw.	B. F. Modisett.
Hot Springs.	Garland	85	2	61.2	—	92	6	30	13	46	2.90	—	2.00	0.0	3	27	3	1	nw.	Hot Springs Water Co.
Huttig.	Union	345	14	61.2	—	94	4	26	13	44	0.31	— 2.35	0.31	0.0	1	25	6	0	sw.	C. A. Berry.
Jonesboro.	Craighead	16	64	61.2	+ 1.1	89	8	34	23	38	1.40	—								



TABLE 1.—Climatological data for October, 1909. District No. 7—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.	Prevailing wind direction.
Louisiana.																				
Abbeville.....	Vermilion.....	18	22	68.6	- 0.6	92	4†	39	25	42	2.35	- 1.02	1.75	0.0	3	22	7	2	se.	Hon. C. J. Edwards.
Alexandria.....	Rapides.....	77	21	66.6	+ 0.4	97	8	34	25†	46	2.58	- 0.12	2.58	0.0	3	18	6	7	e.	Miss Nellie Graham.
Amite.....	Tangipahoa.....	130	21	66.8	+ 0.4	92	5†	35	25†	43	3.00	+ 0.60	2.00	0.0	18	13	0	n.	Miss Lula M. Wentz.	
Baton Rouge.....	E. Baton Rouge.....	35	20	70.0	+ 2.3	96	5	38	25	36	1.40	- 1.88	1.40	0.0	24	1	6	e.	Elmo M. Bott.	
Burnside.....	Ascension.....	20	9			97	6	40	25	40	1.94		0.97	0.0	3	21	6	4	n.	C. S. McFarland.
Burrwood.....	Plaquemines.....	1	19	75.8	+ 2.5	89	6†	58	24	17	0.10	- 4.28	0.10	0.0	1	22	3	6	n.	Graham Myers.
Calhoun.....	Ouachita.....	180	17	66.2	+ 2.2	93	5	35	25	42	1.89	- 0.52	1.70	0.0	2	22	7	2	s.	N. L. Exp. Station.
Cameron.....	Cameron.....	6	14	71.9	+ 2.1	92	6	47	1	40	2.55	- 0.57	2.00	0.0	18	12	1	se.	State Biologic Station.	
Cheneyville.....	Rapides.....	67	22	66.8	+ 1.0	94	5	32	25	46	1.42	- 0.49	1.29	0.0	21	2	6	e.	Walter I. Tanner.	
Clinton.....	East Feliciana.....	113	20	66.8	- 0.2	91	5†	37	25	38	1.39	- 1.13	0.80	0.0	3	19	2	10	n.	John A. White, jr.
Collinston.....	Morehouse.....	65	7	65.6		93	7	32	24	43	1.15		1.15	0.0	1	29	1	1		W. A. Page.
Covington.....	St. Tammany.....	39	17	68.5	+ 1.6	96	6	38	25	42	2.48	- 0.17	2.01	0.0	2	20	4	7	n.	C. Champagne.
Dodson.....	Winn.....		1	65.9		92	6†	35	25	45	2.48		2.48	0.0	1	23	3	5	s.	J. P. Lucas.
Donaldsonville.....	Ascension.....	33	19	71.7	+ 2.7	94	6	51	31	34	1.40	- 1.47	1.10	0.0	2	28	3	0	e.	John F. Park.
Farmerville.....	Union.....	177	19	64.7	+ 1.2	90	4†	35	24	39	1.76	- 0.97	1.76	0.0	1	23	4	2	s.	W. P. Chandler.
Ferriday.....	Concordia.....		3	65.8		93	7	32	25	40	2.85		2.85	0.0	1	28	0	3	n.	R. Z. Slater.
Franklin.....	St. Mary.....	10	17	70.6	+ 2.0	95	5	41	25	40	1.98	- 1.09	0.95	0.0	3	18	4	9	n.	Miss Josephine M. Bonney
Grand Cane.....	De Soto.....	302	3	66.5		95	6	41	2	49	4.10		2.30	0.0	3	25	1	5	s.	J. J. Paxton.
Grand Coteau.....	St. Landry.....	93	17	70.2	+ 2.8	94	5	39	25	37	2.75	- 0.35	2.30	0.0	2	25	5	1	sw.	St. Charles College.
Hammond.....	Tangipahoa.....	44	10	68.4	+ 1.3	94	5†	36	25	40	1.13	- 1.73	0.52	0.0	3	28	2	1	se.	C. C. Carr.
Houma.....	Terrebonne.....		17			93	5	43	25	40	1.82	- 2.05	1.80	0.0	3	19	8	4	ne.	J. M. Haggerty.
Jennings.....	Calcasieu.....	30	11	69.7	+ 1.2	93	5	28	25	42	2.26	- 0.73	1.79	0.0	4	21	5	5	e.	J. F. Buch.
Lafayette.....	Lafayette.....	36	22	69.1	+ 1.3	93	5	28	25	42	2.26	- 0.73	1.79	0.0	4	21	5	5	e.	J. J. Davidson.
Lake Charles.....	Calcasieu.....	22	21	68.6	+ 0.1	96	5	39	25	46	3.34	- 0.18	2.37	0.0	2	25	2	4	n.	A. O. Boudreaux.
Lakeside.....	Cameron.....	6	8	70.5		94	5†	42	24†	33	2.07		2.07	0.0	1	27	0	4	ne.	L. J. Nunemacher.
Lawrence.....	Plaquemines.....	6	19	70.3	0.0	92	5	49	24	32	2.78	- 0.12	2.25	0.0	3	25	4	2	n.	H. C. Warmoth.
Liberty Hill.....	Bienville.....	22	22	69.6	+ 3.7	96	5	33	25	50	1.49	- 1.40	1.43	0.0	2	25	2	4	n.	Dr. E. A. Crawford.
Logansport.....	De Soto.....	192	4			93	5†	35	25	45	1.98	- 0.76	1.45	0.0	3	19	6	6	s.	Mrs. Bettie M. Dennis.
Melville.....	St. Landry.....	45	22	67.2	0.0	93	5†	35	25	45	1.98	- 0.76	1.45	0.0	2	20	6	5	ne.	Chas. B. McNeill.
Minden.....	Webster.....	194	21	65.7	+ 0.2	96	5	36	25†	48	1.60	- 0.97	1.60	0.0	1	22	3	6	s.	Miss Ethel Fort.
Monroe.....	Ouachita.....	82	22	67.3	+ 1.5	92	5	39	26	44	1.60	- 0.87	1.60	0.0	1	25	2	4	s.	Eugene Stannard.
Morgan City.....	St. Mary.....	14	4			93	5	35	25	37	1.26		0.98	0.0	2	22	3	6	ne.	Virgil E. Kinsey.
Newellton.....	Tensas.....		2	64.5		89	8	35	25	37	1.81		1.65	0.0	2	17	13	1	n.	John D. Fultz.
New Iberia.....	Iberia.....	15	19	70.0	+ 1.3	90	5†	43	25	30	2.70	- 0.05	2.00	0.0	3	18	9	4	se.	Mrs. Jno. A. Gebert.
New Orleans (1).....	Orleans.....	15	35	72.4	+ 2.9	91	5	51	24	25	3.63	+ 0.70	2.21	0.0	5	19	10	2	e.	U. S. Weather Bureau.
New Orleans (2).....	do.....	18	22	71.2	+ 2.7	89	5†	44	25	31	3.70	+ 1.26	1.80	0.0	6	23	5	3	s.	Sugar Exp. Station.
New Orleans (3).....	do.....										3.58		2.48	0.0	4					
New Orleans (4).....	do.....										3.57		1.76	0.0	6					
New Orleans (5).....	do.....										5.36		3.41	0.0	4					
New Orleans (6).....	do.....										3.70		2.24	0.0	4					
New Orleans (7).....	do.....										3.83		2.30	0.0	4					
New Orleans (8).....	do.....										3.38		1.90	0.0	4					
Opelousas.....	St. Landry.....	83	18	68.2	+ 0.8	95	5	35	25	42	2.20	- 0.57	1.70	0.0	2					
Pearl River.....	St. Tammany.....		3								3.86		1.98	0.0	4	21	1	9	n.	Andrew Moresi.
Plain Dealing.....	Bossier.....	268	17	67.6	+ 2.6	94	5†	32	25	47	1.35	- 1.52	1.07	0.0	3	24	4	3	ne.	George F. Banks.
Rayne.....	Acadia.....	44	18	72.4	+ 2.9	92	5	40	25	35	2.00	- 0.77	1.90	0.0	3	21	2	8	n.	Leon Sanders.
Reserve.....	St. John Baptist.....		8	65.3		92	5†	38	24†	40	0.42		0.42	0.0	1	20	10	1		A. P. McNeill.
Robeline.....	Natchitoches.....	147	14	65.2	+ 1.2	94	6	31	25	46	2.05	- 0.42	2.00	0.0	2	21	6	4	n.	Leon Godchaux Co.
Ruston.....	Lincoln.....	312	13																	Miss Ruby McCook.
Schriever.....	Terrebonne.....	17	18	71.6	+ 3.5	98	5	40	25	44	1.44	- 1.47	0.76	0.0	3	20	2	9	e.	J. C. H. McKinney.
Shreveport.....	Caddo.....	249	37	68.0	+ 2.4	90	5	43	25	32	1.27	- 1.91	1.10	0.0	4	25	2	4	se.	Charles V. Moore.
Simmesport.....	Avoyelles.....		4								3.50	+ 1.25	1.60	0.0	6	19	8	4	se.	W. P. Denny.
Southern Univ. Farm.....	Jefferson.....	14											1.60	0.0	6	19	8	4	se.	F. L. St. Martin.
St. Francisville.....	West Feliciana.....	115	5	65.6		92	5	41	25†	44	1.50		1.50	0.0	1	25	2	4	ne.	L. P. Kilbourne.
Sugartown.....	Calcasieu.....		17																	G. W. Richardson.
Tallulah.....	Madison.....	91	1	63.7		93	4	32	25	44	2.33		1.33	0.0	2	14	17	0		G. P. Blair.

\* Precipitation included in that of the next measurement.

\* Temperature extremes are from observed readings of the dry-bulb; means are computed from observed readings.

† Also on other dates.

‡ Data are from standard instruments not supplied by the U. S. Weather Bureau.

§ Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

|| Estimated by observer.

|| Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.

\*, †, ‡, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

TABLE 2.—Daily precipitation for October, 1909. District No. 7, Lower Mississippi Valley.

[illegible]



Stations.	River basins.	Day of month.																																Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
<i>Texas—Cont'd.</i>																																			
Texline.....	Canadian								T.										1.30													T.	1.30		
Tulia.....	Red	T.							.11									1.52	T.	.02													1.65		
Wichita Falls.....	do.								1.50																								1.50		
<i>Kansas.</i>																																			
Anthony.....	Arkansas								.80	.32	.01								1.29	1.21	T.											.01	3.64		
Ashland.....	Cimarron							.82	1.00	.02		.08						.01	.55	.36	.01	.02										.05	2.92		
Burlington.....	Neosho							.90	1.03	.09								.08		.85													.23	2.28	
Chanute.....	do.																		.15														.46	0.51	
Cimarron.....	Cimarron							.32	.08	.03	T.	.10								.35	T.												T.	0.35	
Coldwater.....	do.							.03	.29	.04	T.							T.	.40	.51	T.												.05	1.32	
Columbus.....	Neosho								.44	T.		T.							.43	.10	.51		T.										1.55	3.05	
Coolidge.....	Neosho							.24	.69																									.18	1.11
Cottonwood Falls.....	do.								.25	.50	.05	T.							.02	.03	.18												.32	1.35	
Council Grove.....	do.								1.02																									1.02	
Cunningham.....	Arkansas							T.	1.25	.50	.05								T.	.95	T.												T.	2.75	
Dodge City.....	do.							.04	.32	.04	T.	.03						.02	.18	.11		T.												.18	0.92
Eldorado.....	do.								.53	.88									.21		.59													.15	2.36
Ellinwood.....	do.							T.	1.13	.34	.06	.01						.04		.74			.01				T.							.07	2.40
Emporia.....	Neosho																																		

TABLE 2.—Daily precipitation for October, 1909. District No. 7—Continued.

Stations.	River basins.	Day of month.																																Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
<i>Oklahoma—Cont'd.</i>																																			
Meeker	Canadian								.35											.15												.60	1.10		
Muskogee	Arkansas									.39										.56												1.15	2.10		
Mutual	Canadian							.52	.21										2.35	.26													3.34		
Neola	Washita								.68										1.14	.26													2.08		
Newkirk	Arkansas								.50										.91	.57	.25												.50	2.73	
Norman	Canadian							T	.38										.08	1.10		T											.24	1.80	
Okeene	Cimarron								1.07	.03		T							2.60	.97														4.67	
Oklahoma	Canadian							T	.18		T								.47	1.07							T						.01	1.73	
Oklmulgee	do								.75											.22													.92	1.89	
Pauls Valley	do																																		
Pawhuska	Arkansas																		1.08	1.33													.29	2.86	
Perry	do								.16		T								.15	.88													.27	2.05	
Ravia	Washita								.75																										
Sac & Fox Agency	Canadian																																		
Shawnee	do							T	.40										T	.10	1.13													.08	1.71
Snyder	Red								.75										.47	.20														1.42	
Stillwater	Cimarron								.02	.14									.84	.06	1.11													T	2.17
Supply	Canadian								.13										2.38	.03														2.54	
Tulsa (1)	Arkansas									.67									.37	.35														1.16	1.55
Tulsa (2)	do																																		



TABLE 2.—Daily precipitation for October, 1909. District No. 7—Continued.

[illegible]

## MONTHLY WEATHER REVIEW.

OCTOBER, 1909

TABLE 2.—Daily precipitation for October, 1909. District No. 7—Continued.

Stations.	River basins.	Day of month.																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Louisiana—Cont'd.																																	
Monroe	Ouachita									1.60						T.						T.	T.										1.60
Morgan City	Coast												.98									.28											1.26
Newellton	Mississippi									161.65												T.											1.81
New Iberia	Coast									2.00										.50				.20									2.70
New Orleans (1)	do.									.94	.18									2.21	.29	.01											3.63
New Orleans (2)	do.						.09			.51	.60									1.80	.38	.32											3.70
New Orleans (3)	Coast									.71	.91									2.48	.70												3.58
New Orleans (4)	do.							.08		.91	.14									1.76	.67	.01											3.57
New Orleans (5)	do.									1.21	.11									3.41	.63												5.36
New Orleans (6)	do.									1.02	.22									2.24	.22												3.70
New Orleans (7)	do.									.65	.13									2.30	.75												3.83
New Orleans (8)	do.									.91	.24									1.90	.33												3.38
Opelousas	do.									1.70	.50																						2.20
Plain Dealing	Ouachita									631.07											.25												1.35
Rayne	Coast									1.30	.60									.10													2.00
Reserve	do.										.42																						0.42
Robeline	Red									2.00												.05											2.05
Ruston	Ouachita																																
Schriever	Coast								T.		.76										.50			.18									1.44
Shreveport	Red								.98	.12										.16											.01		1.27
Simmesport	Red									1.04	.30													.06									1.40
Southern Univ. Farm.	Coast							.30		.60	.45									1.30	.30	.55										3.50	
St. Francisville	Mississippi									T.	1.50																						1.50
Sugartown	Red																																
Tallulah	Mississippi									1.33										1.00													2.33



TABLE 3.—Maximum and minimum temperatures at selected stations, October, 1909. District No. 7, Lower Mississippi Valley.

Date.	Colorado.						New Mexico.				Texas.				Kansas.								Oklahoma.					
	Lamar.		Leadville.		Pueblo.		Albert.		Cimarron.		Amarillo.		Paris. §§		Dodge City.		Ellinwood.		Iola.		Liberal.		Wichita.		Ardmore. §§		Bartlesville.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	85	46	63	34	80	46	85	56	79	39	82	57	95	52	87	51	89	49	91	52	87	50	88	56	95	52	94	50
2...	90	44	65	31	82	44	81	51	78	35	83	54	95	54	88	57	89	55	90	52	89	55	87	59	94	55	94	52
3...	89	52	62	32	79	48	83	50	76	41	82	55	94	57	86	55	90	58	91	53	88	52	88	58	93	55	94	52
4...	89	60	58	32	80	49	79	51	73	37	80	52	94	58	86	59	89	47	90	51	86	66	89	61	93	56	93	51
5...	82	45	56	35	75	52	77	48	73	39	79	49	94	58	83	56	88	49	90	52	85	47	89	61	95	55	93	50
6...	73	50	46	31	72	52	71	48	61	39	78	52	95	59	81	53	87	51	89	52	83	45	87	58	95	55	94	52
7...	66	36	42	26	65	43	68	46	63	37	76	55	93	61	76	57	81	59	87	61	76	56	84	62	92	58	84	58
8...	56	35	29	12	47	36	60	41	48	34	57	37	74	62	60	40	75	45	79	56	64	38	66	44	73	57	79	62
9...	61	40	35	14	57	28	59	35	53	23	56	35	68	53	48	36	45	41	58	43	54	36	48	43	62	48	62	49
10...	60	37	44	27	69	36	74	39	66	30	71	42	76	39	69	35	64	40	54	43	71	39	62	43	73	40	65	45
11...	60	33	42	33	47	35	65	40	61	30	66	33	75	42	53	32	58	38	50	34	64	34	56	35	70	46	59	45
12...	58	35	50	25	48	35	58	37	62	34	58	29	64	42	58	26	54	23	50	26	56	36	51	28	63	39	55	28
13...	78	35	53	27	80	35	84	40	76	30	84	40	84	43	75	39	66	34	70	35	82	34	70	38	83	41	85	40
14...	77	43	55	28	81	45	86	54	78	43	79	50	93	51	77	46	75	38	75	41	80	46	76	45	92	53	83	42
15...	72	36	60	26	71	37	79	45	75	37	83	47	86	56	72	45	74	38	69	39	83	41	71	47	85	52	76	41
16...	64	35	60	29	64	36	83	46	80	40	88	45	87	54	72	42	74	44	75	41	80	40	75	50	87	59	77	42
17...	68	34	54	28	60	36	75	50	67	38	70	47	88	61	56	41	67	44	81	47	68	40	76	47	84	67	86	62
18...	62	36	56	24	53	34	59	39	51	38	47	36	86	61	48	39	54	41	48	43	52	38	49	44	80	63	62	49
19...	54	33	54	23	53	26	49	38	56	34	46	36	65	61	43	38	49	39	59	44	44	37	50	41	58	52	59	42
20...	79	32	48	29	77	30	75	42	74	32	75	40	78	53	55	42	60	44	63	51	68	35	59	47	74	48	69	50
21...	74	37	55	23	69	31	69	46	77	35	74	45	87	52	74	36	77	37	77	41	76	38	74	42	91	56	83	46
22...	70	34	49	24	68	35	64	37	66	35	71	48	87	61	71	40	72	50	80	46	73	47	72	43	85	57	86	57
23...	69	28	56	23	65	27	78	41	63	28	64	38	69	49	64	33	62	31	77	32	69	32	58	40	63	44	60	42
24...	83	28	53	30	77	30	66	37	76	24	74	38	70	49	77	38	72	37	60	28	79	35	62	34	66	36	65	31
25...	68	28	54	19	67	36	67	40	66	24	64	43	.....	49	63	41	65	44	63	40	67	39	62	45	69	42	67	42
26...	62	33	51	23	58	37	68	47	67	34	62	41	.....	61	36	65	34	69	34	64	33	66	41	77	39	75	38	
27...	71	29	56	24	66	28	72	37	71	26	68	37	82	.....	69	30	71	31	67	36	69	29	70	42	81	46	77	38
28...	80	27	59	24	76	28	74	40	76	30	76	43	83	54	73	41	74	33	74	39	72	35	73	46	83	51	79	40
29...	84	30	54	28	81	36	79	43	74	23	82	48	82	52	77	55	78	55	76	54	79	43	75	58	79	53	80	52
30...	79	32	48	27	72	38	74	45	69	29	81	50	81	52	85	49	87	55	81	58	85	45	80	60	80	59	83	53
31...	64	40	38	12	58	33	67	42	58	32	62	47	81	53	66	44	78	51	69	52	72	42	75	49	80	60	73	68
Mns	71.8	36.9	51.8	25.9	67.6	36.8	71.9	43.6	68.2	33.2	71.5	44.2	82.9 <sup>b</sup>	53.4 <sup>b</sup>	69.5	43.0	71.9	43.1	71.7	44.4	73.1	41.4	70.6	47.3	80.2	51.4	76.5	47.4

Date.	Oklahoma.												Missouri.										Lynnville, Ky.		Jackson, Tenn.			
	Enid. §§		McAllister.		Mangum. §§		Muskogee.		Oklahoma.		Weatherford. §§		Woodward.		Caruthersville.		Ironton. §§		Lamar. §§		Olden.		Springfield.		Lynnville, Ky.		Jackson, Tenn.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	95	48	.....	.....	80	49	93	52	90	57	90	61	88	48	79	45	76	38	94	54	79	48	87	56	75	43	83	44
2...	94	50	.....	.....	89	48	95	54	89	60	89	59	88	57	83	43	83	41	94	50	87	50	88	59	81	42	84	41
3...	92	51	.....	.....	90	46	94	58	88	59	91	57	88	51	92	47	90	51	95	56	90	48	90	62	86	49	90	45
4...	95	50	.....	.....	90	48	95	57	90	60	91	59	88	53	95	50	89	48	95	53	91	50	89	62	88	57	94	50
5...	93	51	.....	.....	89	48	95	53	89	59	90	58	87	50	83	57	82	47	95	50	90	49	89	59	82	54	94	53
6...	93	48	.....	.....	89	50	95	56	89	59	89	54	85	65	85	52	80	45	93	55	81	69	88	60	79	46	88	50
7...	88	49	.....	.....	85	51	92	63	84	62	85	71	82	58	84	47	80	41	92	58	81	44	85	62	84	42	87	44
8...	70	59	.....	.....	65	58	80	56	77	48	69	57	71	44	86	51	82	44	84	60	79	51	82	58	84	52	84	51
9...	50	45	.....	.....	58	40	61	51	52	43	52	41	52	40	76	65	70	61	58	53	70	69	61	46	75	62	82	62
10...	67	35	.....	.....	71	38	71	41	69	36	72	40	71	32	76	49	59	41	58	44	63	44	54	42	71	59	75	55
11...	60	40	69	44	71	38	64	41	61	42	63	49	59	39	71	44	59	42	53	40	60	39	52	34	66	49	71	45
12...	56	35	59	40	59	37	56	32	59	39	62	40	60	42	57	30	48	30	52	25	50	28	44	27	59	32	69	34
13...	67	35	80	36	76	37	76	34	75	40	81	39	83	41	70	35	61	21	70	26	64	29	64	32	65	26	66	27
14...	84	45	92	57	84	41	86	49	84	50	77	56	83	45	89	42	58	35	80	40	81	42	75	46	64	44	74	49
15...	86	45	84	49	81	49	80	45	79	47	81	48	80	37	74	36	66	31	72	39	68	37	65	44	65	38	74	38
16...	85	45	85	55	86	41	81	47	86	57	89	49	89	44	80	34	73											

TABLE 3.—Maximum and minimum temperatures at selected stations, October, 1909. District No. 7—Continued.

Date	Tennessee.				Arkansas.																		Mississippi.					
	Memphis.		Union City.		Bentonville.		Corning.		Dardanelle. #		Eldorado. #		Fort Smith.		Little Rock.		Pine Bluff. #		Texarkana. #		Wynne. #		Clarksdale. #		Corinth. #		Greenville. #	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	75	56	81	43	90	56	79	46	89	46	88	50	91	57	80	58	87	52	89	50	79	51	84	49	76	48	87	49
2	80	57	84	42	90	52	82	45	92	52	87	53	92	58	81	60	88	52	90	55	84	50	85	50	79	44	86	53
3	82	57	89	48	91	54	88	50	96	59	87	52	91	60	84	58	90	53	88	56	85	52	87	48	84	46	87	50
4	86	61	90	56	90	51	93	51	96	50	90	52	92	56	89	60	92	50	89	53	90	52	92	51	88	51	89	53
5	86	65	86	55	89	50	84	52	96	50	92	53	92	58	90	63	94	52	89	55	91	53	93	53	90	53	91	54
6	82	62	85	47	90	51	80	52	95	52	92	56	92	57	83	63	90	55	92	57	83	55	89	55	83	54	90	57
7	84	59	86	42	88	46	83	46	94	55	90	55	89	64	85	63	90	57	90	60	85	58	87	54	82	50	89	59
8	81	65	84	48	80	57	84	49	84	58	82	58	82	58	76	64	85	60	81	63	82	59	86	56	82	54	88	60
9	73	62	76	62	86	46	77	67	65	59	65	61	58	49	71	56	73	60	62	56	77	64	63	77	60	75	65	75
10	67	52	72	53	61	42	72	48	72	42	72	45	66	43	68	48	72	44	74	43	69	41	49	68	55	73	52	73
11	64	48	67	47	58	35	67	45	68	44	74	49	63	43	65	48	75	45	71	46	68	41	72	49	67	45	75	50
12	54	40	59	33	50	28	58	31	60	39	63	46	53	37	52	43	60	42	60	45	57	37	57	41	56	37	61	46
13	63	40	67	25	67	34	65	26	71	34	78	43	74	36	64	40	70	34	79	46	64	30	68	31	65	30	72	37
14	78	55	63	46	80	48	82	40	88	35	87	48	85	30	84	54	87	60	86	50	83	33	80	76	34	86	43	81
15	70	51	69	37	72	41	73	32	82	44	82	49	79	47	76	58	83	45	80	59	73	41	79	44	81	46	81	50
16	71	50	75	35	72	44	76	33	68	44	84	50	69	50	64	54	80	53	82	59	73	58	77	42	74	40	82	49
17	79	59	82	56	81	57	84	57	86	42	85	51	85	55	80	56	85	56	85	61	81	43	85	54	81	54	85	52
18	79	54	81	53	68	47	83	57	85	55	82	57	81	60	81	54	85	55	80	60	84	55	80	50	82	52	84	50
19	66	52	68	49	59	47	64	47	64	52	67	37	60	52	60	31	80	54	68	58	66	50	75	50	72	52	74	52
20	74	61	69	53	67	53	69	54	75	52	80	56	71	55	72	35	80	62	76	55	76	50	80	53	69	53	81	56
21	77	64	83	63	79	51	82	55	85	55	85	57	82	57	82	61	88	56	84	62	80	61	84	64	78	62	84	62
22	78	64	83	55	82	52	82	52	86	55	86	58	84	59	81	61	88	58	85	62	83	57	83	55	79	54	84	56
23	69	48	74	48	52	42	77	50	65	38	69	60	66	45	73	48	74	56	67	57	62	54	76	55	63	58	68	56
24	55	42	59	43	60	36	60	40	66	39	64	38	61	39	61	43	72	38	61	41	57	40	63	42	53	40	62	42
25	63	41	66	29	66	42	67	31	70	34	69	36	70	41	66	43	75	35	68	42	65	38	68	34	62	31	69	35
26	70	49	74	35	69	40	74	35	75	35	76	38	71	45	73	48	82	40	71	42	73	39	77	35	71	36	78	38
27	67	51	76	36	72	40	70	45	75	40	78	43	72	45	71	52	83	43	74	46	70	42	73	41	75	41	77	45
28	68	46	75	33	75	41	69	33	76	40	78	43	75	49	71	47	86	44	75	47	69	42	75	39	69	36	77	43
29	72	47	78	32	73	52	75	32	80	41	78	43	76	52	74	48	86	40	76	51	74	43	77	37	75	36	80	41
30	75	50	79	33	76	53	78	35	82	42	80	44	77	52	77	50	86	42	79	52	76	44	81	37	77	36	82	41
31	78	59	80	47	68	54	80	53	68	42	81	50	71	60	76	60	76	60	75	54	78	47	83	37	78	40	83	43
Mns	73.1	53.8	76.1	44.7	73.3	47.0	76.0	44.8	79.2	45.7	79.7	50.0	76.5	51.3	74.5	53.8	82.0	50.1	78.3	53.0	75.4	46.9	79.2 <sup>b</sup>	47.3 <sup>a</sup>	74.6	46.1	80.0	49.6

Date	Mississippi.								Louisiana.																			
	Kosciusko. #		Natchez. #		Vicksburg.		Alexandria. #		Baton Rouge. #		Covington. #		Lafayette. #		Lake Charles. #		Monroe. #		New Orleans.		Robeline. #		Schriever. #		Shreveport.			
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	84	49	88	53	84	61	86	45	85	57	90	49	87	52	89	47	81	52	84	65	80	45	89	55	87	56	89	59
2	83	47	85	56	82	63	88	49	87	61	89	53	87	54	90	54	87	54	84	67	84	49	91	54	89	59	89	59
3	86	47	85	55	86	58	88	49	89	58	90	51	88	55	92	56	86	52	86	66	89	45	93	54	87	57	87	57
4	90	50	93	58	87	62	93	50	92	58	93	51	92	54	94	52	89	55	89	69	92	46	95	52	88	56	88	56
5	91	50	92	59	87	63	95	51	96	60	95	54	93	58	96	53	92	57	91	71	90	48	98	57	90	62	91	62
6	90	51	90	60	90	65	93	50	92	63	96	57	92	60	95	57	90	58	90	72	94	51	97	58	90	62	90	62
7	80	53	95	62	91	67	92	55	93	60	91	57	92	58	93	56	91	58	88	69	92	53	94	57	88	64	89	64
8	85	50	90	66	85	65	97	55	85	66	88	59	87	63	89	54	83	59	87	71	81	53	92	62	79	61	87	61
9	73	61	74	64	72	61	73	64	80	64	78	68	76	64	82	56	75	64	80	69	72	61	87	68	63	55	87	63
10	73	57	74	55	70	55	75	50	76	60	79	62	74	56	80	50	74	49	74	66	76	42	80	49	74	46	74	46
11	72	45	74	52	71	52	77	45	78	53	80	47	76	47	83	49	78	48	75	60	79	41	81	45	75	49	75	49
12	61	42	66	49	62	47	69	46	66	52	76	47	74	50	78	49	78	47	70	60	68	41	83	48	65	47	65	47
13	66	32	79	48	74	47	82	47	76	44	77	47	80	49	84	49	68	50	77	56	83	44	86	48	80	51	80	51
14	83	36	86	64	82	63	88	52	84	61	87	48	86	52	85	49	87	45	85	68	89	51	89	54	87	66	87	66
15	77	48	84	63	80	65	85	64	88	67	90	61	88	65	90	50	87	56	84	70	85	60	95	61	82	62	82	62
16	78	41	88	57	82	56	86	54	82	54	90	49	85	56	88	50	89	5										



Climatological Data for October, 1909.  
DISTRICT No. 8, TEXAS AND RIO GRANDE VALLEY.

BERNARD BUNNEMEYER, District Editor.

## GENERAL CLIMATOLOGICAL CONDITIONS.

For the district as a whole the month of October was warm, with somewhat deficient precipitation and an abundance of sunshine. During the greater part of the month the weather was pleasant, although on a number of days there was dense morning fog in many localities. In the Texas portion of the district these fogs were especially numerous on the 6th, 7th, 20th, 21st, and 22d. There were but few rainy days, the average being about 4 in Colorado and about 3 in New Mexico and Texas. In Colorado practically all the precipitation occurred from the 3d to the 9th, inclusive, and the long, dry spell from the 10th to the 30th forms a conspicuous feature of the weather in the extreme upper Rio Grande watershed. In New Mexico the weather was showery, with occasional thunderstorms, from the 1st to the 8th and on the 17th and 18th, and generally fair on the other days of the month. In Texas showers occurred principally on the 8th, 9th, 17th to 19th, and 31st, but they were heavy in a large number of localities. An excessive precipitation of 10 inches was reported from San Marcos on the 19th, and of 8 inches from Columbia on the 31st. At 19 other stations in Texas the twenty-four-hour rainfall equaled or exceeded 2.50 inches which, at several of the stations, was practically the only precipitation during the month. However, some of the precipitation on the last day of the month will not appear in this report, because some of the observers take their observations in the forenoon. Numerous thunderstorms occurred in Texas during the 8th and 9th. Snow fell on several days in Colorado and New Mexico, reaching a maximum fall of 8 to 16 inches in the upper Rio Grande watershed, and of 14 inches in the upper Rio Pecos. The snow in New Mexico had practically all disappeared before the close of the month.

## TEMPERATURE.

The mean temperature was above the normal in Colorado and Texas, and very nearly normal in New Mexico. A maximum daily excess of over 3° occurred in portions of the upper and lower Rio Grande, lower Rio Pecos, and upper Trinity River valleys. A nominal deficiency occurred in New Mexico over limited areas of the Rio Grande and Rio Pecos watersheds, and in Texas over portions of the Guadalupe watershed. The change in temperature from day to day was comparatively small, although there were two well-defined cold periods during the month. The first extended from the 6th to the 13th, and during its prevalence the lowest temperatures of the month occurred in nearly all portions of the district. The lowest reported from Colorado was 8° on the 9th at San Luis, in the Rio Grande watershed; from New Mexico, 4° on the 8th at Truchas, in the same watershed; and from Texas, 26° on the 12th at Plainview, in the extreme upper Brazos drainage basin. The second cold period extended from the 22d to the 27th. It was less intense than the former and was hardly felt in Colorado. The highest temperatures reported were: In Colorado, 80° on the 2d at Saguache and at San Luis, both in the Rio Grande Valley; in New Mexico, 93° on the 16th at Carlsbad in the Rio Pecos Valley; and in Texas, 105° on the 14th at Fairland in the middle Colorado River Valley. In the Rio Grande drainage basin the local monthly mean temperatures ranged from 40.4° at Hopewell, N. Mex., to 77.0° at Fort McIntosh, Tex.; in the Rio Pecos drainage basin, from 42.4° at Windsor's Ranch, N. Mex., to 67.2° at Barstow, Tex.; and in the remaining drainage basins of the district, from 59.8° at Plainview, in the upper Brazos River Valley, to 76.4° at San Juanito, in the coastal plains.

## PRECIPITATION.

The precipitation over the Rio Grande watershed was decidedly greater than the normal in Colorado, the average being 1.72 inches, with an excess of 0.90 inch. It was also greater than the normal over a short stretch from the Colorado border line southward to Espanola, N. Mex., but beyond that station there was a general deficiency, which was especially pronounced over the Texas portion. In New Mexico the precipitation over this watershed averaged 0.47 inch, which is 0.32 inch less than the normal. The greatest was 1.61 inches at Mountainair, and the least, 0.00 inch at Albuquerque, while at six stations the amount was too small to be measured. In Texas the average was only 0.15 inch, which is about 1.50 inches below the normal. The greatest was 0.42 inch at Fort McIntosh, and the least, 0.00 inch at Eagle Pass. Some of the precipitation in Colorado and New Mexico was in the form of snow, the greatest monthly amount in Colorado being 15.8 inches at San Luis, and in New Mexico, 9 inches at Chama.

In the Rio Pecos watershed the precipitation was also decidedly deficient, the greatest deficiency occurring from the New Mexico border line southward to the Rio Grande. In New Mexico the precipitation averaged 0.84 inch, which is about 0.50 inch less than the normal. A nominal excess occurred, however, in a few localities. The greatest monthly amount was 1.88 inches at Harveys Upper Ranch, and the least, 0.10 inch at Fort Sumner. Over the Texas portion of this watershed the amount was too small to be measured. Snow occurred in the higher northern localities, the greatest amount reported being 14.2 inches at Harveys Upper Ranch.

In the watersheds of the Nueces and San Antonio rivers the precipitation averaged about 1.50 inches which, while considerably less than the normal, exceeded the September rainfall by over 0.50 inch. The amounts in the Nueces watershed ranged from 0.36 inch at Sabinal to 3.72 inches at Rossville, and in the San Antonio, from 1.42 inches at Boerne to 1.57 inches at Runge.

A marked excess of over 2 inches occurred in the Guadalupe drainage basin which was due to excessive local rains in portions of that valley. At San Marcos the total monthly amount was 10.10 inches, of which 10 inches fell in twenty-four consecutive hours. This was the heaviest in the watershed. The least was 1.05 inches at Victoria, and the average for the watershed was 3.44 inches. During the preceding month there was no rain at San Marcos, while the heaviest occurred at Victoria.

In the Lavaca watershed the precipitation averaged 1.66 inches, the greatest being 1.80 at Edna, and the least, 1.52 at Hallettsville. This was over twice the amount received during September, but was still considerably less than the normal.

The rainfall over the Colorado River watershed was very nearly normal, with an average of 2.22 inches. A deficiency occurred in the upper and lower portions, and an excess in the middle portion. The greatest monthly amount was 3.90 inches at Knickerbocker, and the least, 0.49 inch at Midland. The rainfall exceeded the September average by over 0.70 inch.

The Brazos River watershed received much more precipitation than it did during the preceding month, the average amount being 3.11 inches as against 0.95 inch in September. It was 0.73 inch above the normal. There was, however, a deficiency in its upper portion, but south of Panter there was a general excess. The greatest monthly amount was 10.75 inches at Columbia, which was also the greatest for the district; and the least was 0.98 inch at Plainview.

In the Trinity River drainage basin the precipitation averaged slightly greater than in that of the Brazos. The average was 3.17 inches and exceeded the September average by over 2 inches. There was a marked excess in the lower portion, while in the middle and upper portions there were stretches with considerable deficiency. The greatest monthly amount was 8.25 inches at Liberty, and the least, 0.60 inch at Bridgeport.

The rainfall over the Neches and Sabine watersheds was much more uniformly distributed than over any of the other watersheds. In the Neches drainage basin the greatest monthly amount was 4.28 inches at Carmona; the least, 2.15 inches at Henderson; and the average, 2.93 inches. In the Sabine drainage basin the greatest monthly amount was 4.67 inches at Marshall; the least, 2.46 inches at Logansport; and the average, 3.66 inches. This was the largest average in the district.

#### RIVER CONDITIONS.

Most of the rivers in the district carried a larger volume of water than during the preceding month. In the Rio Grande it was less throughout its length, there being a gradual diminution from the beginning to the close of the month. At Del Norte, Colo., the discharge ranged from 955 second-feet on the 6th to 418 on the 31st, and the average was 633. This was much less than during any of the preceding three months.

Near Presidio, Tex., the flow of the river has been comparatively good. At Eagle Pass the river was abnormally low during the entire month, with a gradual decrease from day to day. The supply, however, has been abundant for irrigating purposes. At Zapata the river was nearly normal. There was a rise of 2 feet on the 20th. At Llano Grande there has been a slow decrease, but the supply has been ample for stock and irrigation. At Brownsville the stage of the river was 35.3 feet on the 1st and decreased gradually to 30.6 feet on the 31st. The average stage of the river at this place is about 31 feet. During September the highest stage was 40.7 feet on the 5th, and the lowest, 35.9 feet on the 30th.

The average volume of water in the Colorado River was greater during October, 1909, than during the corresponding period of last year; that of the Guadalupe and Neches was about the same, while that of the Brazos, Trinity, and Sabine was less. The average stages of all these rivers, however, were higher than during the preceding month.

A sharp rise occurred in the Guadalupe and in the middle and lower portions of the Colorado rivers after the rains of the 18th and 19th. At Waco, Valley Junction, Long Lake, and Logansport the river stages were the lowest on record for October since the opening of these stations. In the upper Sabine River there was so little water during part of the month that some of the cattle in the bottom pastures had to be moved.

#### MISCELLANEOUS.

The rainfall in Texas during the month was of great benefit to the State and ended the drought in many sections.

At San Marcos an unusually heavy rainfall of 10 inches occurred during the night of the 18th, which flooded the town and caused considerable damage.

A severe windstorm of short duration occurred at Alvin on the 31st, wrecking several houses and damaging a large railroad water tank.

Killing frost was general in Colorado on the 9th. In New Mexico killing frost extended into the southern counties on the 8th and 9th, although a few far southern localities had no killing frost until the last decade, the dates varying from the 22d to the 27th, while a few other southern localities had no frost during the month. There was no damage from the frost. In Texas killing frosts occurred on the 10th and 12th in the extreme upper Brazos and in the upper and middle Colorado valleys, and light frost as far southward as San Antonio. These frosts damaged vegetation in some sections. Light frost occurred also from the 24th to the 26th in the northern half of Texas.

At the Carlsbad project on the Rio Pecos very little water has been used for irrigation during the month, except for the fall planting of alfalfa. At the Hondo project there has been no water available for irrigation during the month. At the Leasburg project water was delivered for irrigation through the canal until the 15th, when it was discontinued preparatory to cleaning and repairing the canal.

#### IRRIGATION IN TEXAS.

So far as known there are at present 92 irrigation companies doing business in the State of Texas, with an aggregate capitalization of \$11,614,820. In the Texas rice fields alone, there are 43 canals, located in the southeastern portion of the State from Orange County westward to Colorado and Jackson counties. The last legislature (thirty-first) passed an act that became a law April 21, 1909, charging the commissioner of agriculture of the State with certain duties in connection with the system of irrigation now in operation in Texas. The following is a copy of that law:

SECTION 1. It shall be the duty of the commissioner of agriculture to prepare and make public reports on the present system of irrigating now in operation in this State, the cost of maintenance and operation of same, the character and kind of irrigation plants which result in the greater saving to users of water, the class and character of water contracts entered into by various canal companies; he shall also inquire into the reasonableness and fairness of rates being charged for water by the various canal companies in this State, and from time to time shall make public the result of his inquiries; he shall collect and publish statistics and other information regarding the irrigation of rice and other crops, as may be of benefit in developing and collaborating a more efficient system of laws safeguarding and defining the rights of users and sellers of water for irrigating purposes; and he shall make up and file an annual report on same with such recommendations (as) he may deem beneficial to the industry, which report shall be filed with the governor and be transmitted to the legislature.

SEC. 2. The commissioner of agriculture is hereby empowered and authorized to employ a competent engineer and expert possessing a practical knowledge of the application of irrigation to the raising of rice and other crops, for the purpose of assisting him in performing the duties required of him in Section 1 of this act.

SEC. 3. The fact that there is now no means of collecting data on canal rates, and that there is no member of the department of agriculture qualified to perform the duties above mentioned, creates an emergency and an imperative public necessity that the constitutional rules requiring bills to be read on three several days in both houses be suspended, and that this act shall take effect and be in force from and after its passage, and it is so enacted.

The same legislature also created a levee and drainage board to work in conjunction with the U. S. Geological Survey, and amended the act of the thirtieth legislature, approved March 23, 1907, providing for drainage districts.



TABLE 1.—Climatological data for October, 1909. District No. 8, Texas and Rio Grande Valley.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.					Precipitation, in inches.				Sky.				Observers.			
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	Prevailing wind direction.	
<b>Colorado.</b>																				
Amethyst (near).	Mineral.	8,730	1																	
Blanca.	Costilla.	8,403		45.3		79	1	11	9	58	1.18		0.66	1.0	3	21	9	1	sw.	Don C. La Font.
Cumbres.	Conejos.	10,015	3								2.37		0.90	9.8	6					L. C. Audrain.
Garnett.	Costilla.	7,576	16	44.8	+ 3.1	76	1	14	31	53	1.60	+ 1.07	0.61	0.0	5	21	6	4		Venita A. Good.
Hermit.	Hinsdale.	9,843									1.94		0.90	3.8	7	19	8	4		Chas. Speiser.
La Veta Pass.	Costilla.	9,000									1.59		0.63	13.2	4	18	5	8	w.	C. C. Mason.
Manassa.	Conejos.	7,700	3	46.0		75	11	13	9	50	1.71		0.89	4.4	6	18	10	3	w.	Norvin R. Lively.
Platoro.	do.	9,675	2								1.71		0.89	4.4	6	18	10	3	w.	J. B. Chapman.
Saguache.	Saguache.	7,740	17	48.2	+ 2.9	80	21	18	30	50	1.62	+ 0.72	0.68	15.8	5	25	5	1	w.	Walter R. Hook.
San Luis.	Costilla.	7,794	18	46.6	+ 1.5	80	2	8	9	53	1.62	+ 0.72	0.68	15.8	5	25	5	1	w.	Eugene Williams.
Wagon Wheel Gap.	Mineral.	8,434	10																sw.	P. B. Albright.
<b>New Mexico.</b>																				
Agricultural College.	Dona Ana.	3,863	43	62.1	+ 0.1	90	1	30	10	53	0.18	- 0.58	0.11	0.0	3	22	9	0	s.	
Alamogordo (near).	Otero.	4,338	9	63.6		90	1	31	9	46	0.13		0.13	0.0	1	25	6	0	w.	N. M. Agric. College.
Alamogordo.	do.	4,320									0.04		0.02	0.0	2					Jas. C. Dunn.
Albuquerque.	Bernalillo.	5,200	32	59.4	+ 2.7	86	11	34	9	44	0.00	- 0.74	0.00	0.0	0	27	2	2	n.	Agent E. P. & S. W. R. R.
Amizett.	Taos.	9,018									1.15		0.42	0.0	5	18	8	5	sw.	University of N. M.
Ancho.	Lincoln.	6,112									0.19		0.15	0.0	3	23	3	5	w.	Geo. W. Oates.
Aspen Grove Ranch.	Rio Arriba.	9,000									0.97		0.55	2.0	3	20	7	4	w.	Agent E. P. & S. W. R. R.
Bateman Ranch.	do.	8,900									0.00		0.00	0.0	0	25	6	0	n.	Junius D. Maupin.
Bluewater.	Valencia.	6,732	8								0.00		0.00	0.0	0	25	6	0	n.	John W. Bateman.
Bluewater Reservoir.	do.	9,000									0.21		0.21	0.0	1	23	6	2	s.	Bluewater Developm't Co.
Boas.	Chaves.	4,154		56.3		87	16	24	12	55	0.21		0.21	0.0	1	23	6	2	s.	Do.
Capitan.	Lincoln.	6,348									0.82		0.39	0.0	7	13	15	3		D. C. Savage.
Carlsbad.	Eddy.	3,120	15	63.2	- 0.3	93	16	33	10	55	0.19	- 1.10	0.11	0.0	3	6	20	5	se.	Agent E. P. & S. W. R. R.
Carriazo (1).	Lincoln.	5,429	2								0.10		0.10	0.0	1					U. S. Reclamation Serv.
Carriazo (2).	do.	5,438									1.55	+ 0.32	0.55	9.0	4	26	3	2	sw.	A. H. Harvey.
Chama.	Rio Arriba.	7,851	8	47.0	- 0.8	77	1	14	9	44	0.52		0.38	0.5	2	21	1	9	ne.	Agent E. P. & S. W. R. R.
Clouderoft (1).	Otero.	8,650	7	47.0		70	22	21	9	37	0.52		0.38	0.5	2	21	1	9	ne.	Frank C. Johnson.
Clouderoft (2).	do.	8,650									1.29		0.67	0.0	4	17	12	2	s.	M. P. Conkly.
Corona.	Lincoln.	6,666									0.33		0.17	0.0	3	20	2	9	sw.	Agent E. P. & S. W. R. R.
Coyote.	do.	5,800									0.70		0.34	0.0	5	22	4	5	w.	Do.
Cundiyo.	Santa Fe.	6,889									0.70		0.36	0.0	3					Do.
Demonstration Farm.	San Miguel.	6,800	1								1.12		1.05	T.	3	26	3	2	w.	Do.
Duran (1).	Torrance.	6,272	1	54.8		84	16	28	9	48	1.12		1.05	T.	3	26	3	2	w.	Do.
Duran (2).	do.	6,272									0.29		0.19	1.0	2	22	6	3		Do.
Edison Mine.	Taos.	10,600									1.64	- 0.45	1.10	0.0	3	21	9	1	e.	Do.
Elk (near).	Chaves.		10	58.2		81	1	32	27	38	0.19		0.19	0.0	1	26	5	0	w.	Do.
Escondido.	Otero.	4,014									0.19		0.19	0.0	1	26	5	0	w.	Do.
Espanola.	Rio Arriba.	5,590	13	52.4	+ 0.5	81	2	22	30	50	0.84	+ 0.08	0.30	0.0	5	22	4	5	sw.	Do.
Estancia.	Torrance.	6,140	4	50.0		77	21	21	31	54	1.36		1.34	0.0	2	23	7	1	e.	Do.
Fort Stanton.	Lincoln.	6,231	30	52.8	+ 1.0	83	15	24	24	53	0.82	- 0.54	0.42	0.0	5	19	8	4	w.	Do.
Fort Sumner.	Guadalupe.	3,960	7			90	1	26	26		0.10		0.10	0.0	1					Do.
Gallinas.	Lincoln.	6,635									0.97		0.62	0.0	3	24	7	0	w.	Do.
Gallinas Planting Stat'n.	San Miguel.	7,500	3	49.2		78	1	14	9	45	1.07		0.33	4.4	7	9	18	4	nw.	Do.
Harvey's Upper Ranch.	do.	9,400									1.88		0.77	14.2	6	18	9	4	se.	Do.
Hillsboro.	Sierra.	5,224	10								0.51		0.18	2.5	4	25	2	4	n.	Do.
Hodges.	Taos.	8,484									0.59		0.58	0.0	2	24	4	3	se.	Do.
Hondo Reservoir.	Chaves.	3,904	1	59.8		92	16	29	10	52	0.59		0.58	0.0	2	24	4	3	se.	Do.
Hope.	Eddy.		3								0.67		0.35	4.1	4	8	15	8	sw.	Do.
Hopewell.	Rio Arriba.	9,500		40.4		65	11	9	9	38	0.67		0.35	4.1	4	8	15	8	sw.	Do.
Laguna.	Valencia.	5,840	5	54.2		79	1	24	9	46	T.		T.	0.0	0	20	6	5	w.	Do.
Lagunita.	Guadalupe.	4,500	5	54.5		85	16	26	27	49	0.94		0.54	0.0	3	24	3	4	sw.	Do.
La Huerta.	Eddy.	3,111	1								0.15		0.10	0.0	2	24	6	1	se.	Do.
Lake Valley.	Sierra.	5,415	5								0.17		0.09	0.0	2	23	8	0	sw.	Do.
Las Vegas.	San Miguel.	6,384	23	51.6	+ 1.8	81	1	18	9	51	0.76	- 0.28	0.48	1.5	5	21	7	3	sw.	Do.
Los Lunas (near).	Valencia.	4,900	18	54.4	+ 1.5	82	14	26	9	48	0.05	- 0.82	0.05	0.0	1	22	9	0	w.	Do.
Los Tanos.	Guadalupe.	4,919									0.89		0.80	0.0	2	23	4	4	w.	Do.
Magdalena.	Socorro.	6,557	4	54.2		80	31	23	9	48	T.		T.	0.0	0	24	6	1	w.	Do.
Mineral Hill.	San Miguel.	7,050	5								1.40		0.60	1.0	4	24	0	7	sw.	Do.
Monument.	Eddy.	3,500	4								1.61		1.11	T.	3	27	3	1	sw.	Do.
Mountainair.	Torrance.	6,547	7	54.4		84	1	27	9	43	1.61		1.11	T.	3	27	3	1	sw.	Do.
Newman.	Otero.	3,989									0.60		0.30	0.0	2	27	4	0	e.	Do.
Noria.	Dona Ana.	4,414									T.		T.	0.0	0	27	4	0	e.	Do.
Orogrande.	Otero.	4,171									0.04		0.04	0.0	1	25	5	1	w.	Do.
Oscuro (near).	Lincoln.	5,016									0.15		0.09	0.0	3					Do.
Oscuro (2).	do.	5,016									0.12		0.09	0.0	2	24	5	2	sw.	Do.
Otis.	Eddy.	3,100									0.37		0.11	0.0	5	27	1	3	n.	Do.
Otto.	Santa Fe.	6,200									0.54		0.35	0.2	5					Do.
Pastura.	Guadalupe.	5,285									0.95		0.70	0.0	2	16	12	3	w.	Do.
Red River.	Taos.	8,650		41.5		74	3	6	9	46	0.90		0.50	8.0	2	26	5	0	e.	Do.
Rincon.	Dona Ana.	4,030	11	61.4	+ 1.5	92	1	28	10	54	T.	- 0.50	T.	0.0	0	26	3	2	s.	Do.
Rio Grande Dam.	Sierra.	4,265	11	61.0	+ 3.6	88	1	33	28	48	0.62	- 0.03	0.40	0.0	3	26	2	3	s.	Do.
Rosedale.	Socorro.	6,910	5	54.2		77	1	28	9	33	0.31		0.14	T.	5	25	2	4	w.	Do.
Roswell.	Chaves.	3,578	12	57.5	- 2.0	89	16	29	10	53	0.63	- 0.89	0.63	0.0	1	23	6	2	s.	Do.
San Marcial.	Socorro.	4,439	14	58.4	+ 0.5	84	14	30	10	46	0.25	- 0.59	0.25	0.0	1	23	7	1	sw.	Do.
San Rafael.	Valencia.	6,509	6	54.6		85	14	25	29	54	0.36		0.18	0.0	3	27	3	1	sw.	Do.
Santa Fe.	Santa Fe.	7,013	37	50.0	0.0	74	1	25	31	34	0.62	- 0.45	0.44	1.0	5	22	7	2	ne.	Do.
Santa Rosa (1).	Guadalupe.	4,624	10	58.7		88	11	30	27	48	1.04	+ 0.06	0.59	T.	5	20	10	1	w.	Do.
Santa Rosa (2).	do.	4,624									0.60		0.50	0.0	2					Do.
Socorro.	Socorro.	4,600	19	58.7	+ 0.4	91	1	26	9	51	0.75	- 0.51	0.45	0.0	2	31	0	0	n.	Do.
Stanley (near).	Santa Fe.	6,317									0.5									

TABLE 1.—Climatological data for October, 1909. District No. 8—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, of inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		
<b>Texas—Cont'd.</b>																				
Alvin	Brazoria	49	10								3.14		2.85	0.0	26	1	4	ne.	F. A. Smith.	
Anahuac	Chambers										7.16		2.46	0.0	22	9	0	e.	B. H. Collins.	
Austin	Travis	650	23	67.8	+ 1.2	87	14	43	25	31	2.22	- 0.65	2.08	0.0	22	9	0	e.	A. Deussen.	
Ballinger	Runnels	1,637	14	66.0	+ 1.2	93	15	36	10	46	3.65	+ 1.57	1.30	0.0	4	23	3	se.	E. M. Eubank.	
Barstow	Ward	2,573	2	67.2		96	13	35	10	59	T.		T.	0.0	23	0	0	se.	W. H. Denis.	
Beaumont	Jefferson	29	12	72.6		95	6	48	24	33	3.53	+ 0.61	2.77	0.0	23	0	8	se.	Jno. Bender.	
Beeville	Bee	225	13	72.7	- 0.1	91	6	40	25	41	0.62	- 2.16	0.51	0.0	16	11	4	e.	L. E. Dickey.	
Big Springs	Howard	2,396	7	67.2		96	15	38	12	46	0.79	- 1.67	0.72	0.0	23	7	1	s.	R. Reagan.	
Blanco	Blanco	1,350	13	66.4	- 0.6	90	15	39	26	39	4.42	+ 1.31	4.30	0.0	19	11	1	s.	R. C. Crist.	
Boerne	Kendall	1,412	17	67.9	+ 0.8	95	16	35	8	51	1.42	- 1.82	1.42	0.0	20	3	8	e.	F. W. Schweppe.	
Booth	Fort Bend	81	8								1.57		0.95	0.0	2				T. R. Booth.	
Boquillas	Brewster										1.07		0.82	0.0	3	24	4	3	n.	M. A. Ernst.
Bowie	Montague	1,113	9	69.0	+ 3.7	93	27	39	12	40	1.07	- 0.31	2.13	0.0	4	19	2	1	e.	Craig Anderson.
Brazoria	Brazoria	23	20	72.5	+ 2.5	94	6	43	25	43	3.90		0.48	0.0	3				Mrs. M. A. Stephens.	
Brazos	Palo Pinto	801									1.10		1.02	0.0	3	16	4	11	e.	Robt. E. Boyett.
Brenham	Washington	350	20	71.4	+ 1.3	94	14	47	24	38	1.81	- 1.08	1.02	0.0	1				Mrs. B. F. Sloan.	
Bridgeport	Wise	754									0.60		0.60	0.0	1				Thos. C. West.	
Brighton	Nueces	12	13	75.0	+ 0.5	88	8	50	10	34	0.64	- 1.47	0.33	0.0	3	29	1	1	se.	G. H. Ritter.
Brownsville	Cameron	38	20	74.6	+ 0.4	88	21	53	11	35	0.31	- 2.96	0.31	0.0	2				U. S. Weather Bureau.	
Brownwood	Brown	1,342	19	65.5	- 0.6	98	14	37	10	55	3.77	+ 1.82	2.50	0.0	5	26	5	0	s.	Mrs. Pearl Smith.
Cameron	Milam		1	69.8		96	5	42	9	45	4.17		3.25	0.0	3	26	4	1	s.	J. E. Watts.
Carmona	Polk		1	68.9		96	6	38	25	46	4.28		1.68	0.0	3	23	5	3	s.	G. S. Warner.
Claytonville	Fisher	2,100	5	61.8		86	6	38	18	40	2.39		1.80	0.0	2	29	0	2	s.	Wm. Lanus.
Coleman	Coleman	1,710	15	66.8	+ 0.9	90	16	41	26	39	4.20	+ 2.03	2.50	0.0	3	26	3	2	s.	J. H. Tucker.
Colorado	Mitchell	2,066	15	66.2	+ 1.3	102	16	36	12	52	1.33	- 0.58	1.33	0.0	1				R. M. Webb.	
Columbia	Brazoria	34	20	70.6	+ 0.9	93	1	40	25	41	10.75	+ 7.92	8.00	0.0	4	27	3	1	s.	R. B. Loggins.
Columbus	Colorado	206	5								2.18		1.60	0.0	2				Mrs. Sophie Bridge.	
Comstock	Valverde			69.9		96	14	43	10	40	0.09		0.09	0.0	1	25	5	1	se.	A. D. Brown.
Corpus Christi	Nueces	20	22	74.0	+ 1.4	86	14	53	9	26	0.31	- 1.74	0.26	0.0	2	18	13	0	se.	U. S. Weather Bureau.
Corsicana	Navarro	445	20	69.2	+ 2.2	93	5	44	25	46	4.23	+ 1.40	1.58	0.0	3	26	1	4	se.	E. L. Gibson.
Crockett	Houston	350	5	71.4		96	6	44	10	44	4.61		2.37	0.0	3	22	8	1	s.	A. M. Bencher.
Cuero	DeWitt	177	20	73.4	+ 2.3	98	15	42	25	46	1.44	- 1.50	0.60	0.0	5	18	1	12	s.	H. R. Forbese.
Dallas	Dallas	466	20	68.7	+ 2.5	98	14	40	24	45	2.22	- 0.46	1.09	0.0	4	23	0	8	s.	G. A. Eisenlohr.
Danewang	Wharton	145	13	71.0	- 0.5	91	7	44	10	38	4.60	+ 0.10	2.15	0.0	4	25	5	1	se.	H. P. Hermansen.
Decatur	Wise	1,047	3	70.2		104	7	38	12	56	4.28		2.20	0.0	3	24	4	3		Agent Ft. W. & D. C. Ry.
Del Rio	Valverde	952	3	70.6	+ 0.7	95	14	38	10	46	0.06	- 1.43	0.06	0.0	1	21	9	1	se.	U. S. Weather Bureau.
Dialville	Cherokee	575	11	69.0		93	6	43	24	34	2.80		1.75	0.0	4	24	5	2	s.	J. M. B. McKnight.
Dublin	Erath	1,466	14	67.4	+ 2.4	93	14	41	12	38	3.61	+ 0.33	1.48	0.0	4	25	3	3	s.	Jno. O. Shafer.
Duval	Travis	820	20	70.6	+ 5.6	94	14	45	25	35	3.61	+ 0.57	3.33	0.0	2	25	2	4	s.	J. C. Edgar.
Eagle Pass	Maverick	800	20	74.2	+ 1.7	101	15	41	26	39	0.00	- 1.65	0.00	0.0	0	11	20	0		Jos. Metcalfe.
Edna	Jackson										1.80		1.00	0.0	4				E. L. Faires.	
El Paso	El Paso	3,762	30	64.4	+ 2.0	89	1	38	10	41	0.02	- 0.93	0.02	0.0	1	29	2	0	e.	U. S. Weather Bureau.
Encinal	La Salle		1	74.4		101	15	42	10	47	0.50		0.50	0.0	1	20	8	3	se.	H. C. Braden.
Fairland	Burnet			70.3		105	14	36	8	51	2.88		2.80	0.0	2	26	2	3	s.	R. L. Bush.
Falfurrias	Starr		2	72.7		96	14	41	25	44	0.20		0.20	0.0	1	21	9	1	se.	W. A. Gardner.
Flatonja	Fayette	465	1	72.6		93	6	44	25	37	2.87		1.13	0.0	4	19	9	3	s.	Julius Laux.
Fort Clark	Kinney	1,050	22	69.8	- 0.2	95	15	40	9	45	0.08	- 1.86	0.08	0.0	1	16	11	4	se.	Post Surgeon.
Fort McIntosh	Webb	460	23	77.0	+ 3.4	100	15	46	11	48	0.42	- 0.75	0.42	0.0	1	9	0	22	e.	Do.
Fort Stockton	Pecos	3,050	4	66.7	+ 3.5	95	14	36	24	54	T.	- 1.43	T.	0.0	0	23	8	0	se.	H. H. Butz.
Fort Worth	Tarrant	670	14	68.9	+ 2.3	95	14	43	24	36	2.20	- 0.31	1.33	0.0	3	25	4	2	s.	U. S. Weather Bureau.
Fredericksburg	Gillespie	1,742	20	66.4	+ 1.4	93	14	34	10	46	0.78	- 1.43	0.78	0.0	1	25	4	2	s.	Arthur Striegler.
Gainesville	Cooke	738	20	66.8	+ 1.3	95	14	40	12	43	4.07	+ 1.12	2.77	0.0	3				J. L. Hickson.	
Galveston	Galveston	69	39	73.6	+ 1.2	86	3	56	24	17	7.61	+ 3.43	5.75	0.0	5	23	6	2	se.	U. S. Weather Bureau.
Gatesville	Coryell	795	5	67.5		91	6	40	11	43	2.60		2.00	0.0	2	23	8	0		John Ryan.
Georgetown	Williamson	750	14	67.8	+ 0.4	95	15	38	10	44	2.48	- 1.20	2.20	0.0	4	28	2	1	s.	Prof. R. E. Young.
Gonzales	Gonzales	299	4								2.24		1.61	0.0	4				J. M. Johnson.	
Graham	Young	1,040	5	66.2	+ 2.2	94	3	35	27	51	1.33		0.85	0.0	2	28	1	2	s.	C. W. Johnson.
Grandfalls	Ward																		W. C. Bridwell.	
Grapevine	Tarrant	670	19								2.35	- 0.68	2.05	0.0	3				W. J. Crowley.	
Greenville	Hunt	550	9	67.8		95	2	42	24	44	3.40		1.80	0.0	3	22	0	9	s.	J. P. Regan.
Hallettsville	Lavaca	235	18	72.0	+ 1.3	92	8	43	25	34	1.52	- 1.86	1.03	0.0	3	26	4	1	s.	Dr. J. E. Lay.
Haskell	Haskell	4,013	18	66.7	+ 3.1	96	4	37	12	46	1.90	- 0.21	1.40	0.0	3	26	3	2	s.	P. D. Saunders.
Hebbroville	Duval		2								0.00		0.00	0.0	0				Henry Edds.	
Hempstead	Waller	254	5								1.70		1.70	0.0	1				J. H. Hancock.	
Henderson	Rusk										2.15		1.30	0.0	3	22	5	4		M. Kangerga.
Hewitt	McLennan	664	14								4.52		2.58	0.0	3				I. H. Earle.	
Hillsboro	Hill	628	17																Thompson & Campbell.	
Hondo	Medina	901	7	71.6		93	15	41	10	41	1.47		1.47	0.0	1	13	18	0		H. E. Haas.
Hubbard	Harris	53	20	71.8	+ 1.6	92	6	47	25	32	8.22	+ 4.92	3.90	0.0	5	18	10	3	se.	U. S. Weather Bureau.
Huntville	Hill	638																	J. C. Mecklin.	
Jewett	Walker	400	21	68.0	0.0	91	6	43	10	37	3.07	- 0.15	2.00	0.0	2	18	0	13	se.	W. Y. Barr.
Junction	Leon	496	5	69.0		98	7	40	24	45	2.97		1.93	0.0	4	23	5	3	s.	Earle Adkinson.
Kaufman	Kimble	1,645	7																J. T. Rowsey.	
Keene	Kaufman	448	10	70.1	+ 3.2	94	6	41	24	37	2.74		1.58	0.0	3	23	6	2	s.	B. J. Hubbard.
Kerrville	Johnson																		Industrial Academy.	
Kerr	Kerr	1,650	14	65.6	+ 2.0	95	14	32	26	50	1.75	+ 0.87	1.75	0.0	1	15	5	11	s.	Mrs. F. Coleman.
Knickerbocker	Tom Green	2,050	5	66.5		95	14	36	11	54	3.90		3.18	0.0	2	27	3	1	se.	Jos. Tweedy.
Kopperl	Bosque	576	9								3.38		2.20	0.0	4				T. A. Johnson.	
Lampasas	Lampasas	1,026	18	66.6	+ 0.2	98	13	30	25	54	3.20</									



TABLE 1.—Climatological data for October, 1909. District No. 8—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		
Texas—Cont'd.																			
Panther.....	Hood.....	1,000	19								3.14	- 0.29	1.32	0.0	5				E. H. Snider.
Pierce.....	Wharton.....		3	69.4		90	3†	40	10	44	2.10		0.65	0.0	5	13	9	9	R. B. Pointer.
Plainview.....	Hale.....	3,370	1	59.8		89	16	26	12	51	0.98		0.90	0.0	2	23	6	2	J. F. Sander.
Port Lavaca.....	Calhoun.....	20	8	73.4		91	8	46	10	40	3.01		1.61	0.0	3	23	7	1	J. H. Bickford.
Ricardo.....	Nueces.....			73.2		94	14	44	25	44	0.45		0.45	0.0	1	22	6	3	Lindsay Waters.
Riverside§§.....	Walker.....	169	5								3.20		3.20	0.0	1				Mrs. C. W. Higdon.
Robert Lee§§.....	Coke.....	1,850	1	66.0		95	14	38	24†	47	1.77		1.06	0.0	3	26	4	1	H. D. Pearce.
Rockland§§.....	Tyler.....	136	5								2.16		1.25	0.0	2				D. W. Bellamy.
Rossville.....	Atascosa.....	558	2	70.7		99	6	38	26	47	3.72		3.47	0.0	2	18	11	2	W. F. M. Ross.
Runge.....	Karnes.....	308	14								1.57	- 1.17	1.05	0.0	2				Reiffert & Froese.
Sabinal.....	Uvalde.....	964	5	71.5		98	15	37	31	51	0.36		0.36	0.0	1	17	12	2	Jas. Johnston.
San Angelo.....	Tom Green.....		1	62.5*		87*	3	40*	10†	42*	1.80†		1.80†	0.0	2*	24*	2*	4*	C. W. Goff.
San Antonio.....	Bexar.....	701	24	71.0	+ 0.8	93	14	43	10	40	1.55	+ 0.06	1.55	0.0	1	19	8	4	U. S. Weather Bureau.
San Augustine.....	San Augustine.....			67.4*		93*	5†	36*	25	44*	2.79		1.51	0.0	5	20	8	3	F. A. Wilson.
San Juanita§§.....	Hidalgo.....			76.4		95	8†	47	24	39	0.10		0.10	0.0	1	9	4	18	J. B. McAllen.
San Marcos§§.....	Hayes.....	588	16	68.2	- 0.5	92	14	38	10	45	10.10	+ 7.37	10.00	0.0	2	23	0	8	Miss L. C. Ford.
San Saba.....	San Saba.....	1,712	5	66.5		98	14	34	10	47	1.71		0.85	0.0	3	27	0	4	Jas. Burns.
Santa Gertrudes.....	Nueces.....		7								0.68		0.68	0.0	1				J. B. Wright, jr.
Seymour.....	Baylor.....	1,180	3	64.4		92	14	36	12	43	1.67		0.95	0.0	4	26	3	2	F. M. Deaver.
Somerville.....	Burleson.....	251						40	9		4.20		2.00	0.0	3	28	0	3	W. A. Dolan.
Sonora.....	Sutton.....	2,200	6																Mike Murphy.
Sugarland.....	Fort Bend.....	79	11	71.4		95	6	42	25	37	6.28	+ 2.62	4.71	0.0	3	24	6	1	O. M. Bakke.
Taylor.....	Williamson.....	583	8	69.6	+ 1.3	93	14	42	10	40	3.16	+ 0.60	2.66	0.0	5	24	4	3	U. S. Weather Bureau.
Temple.....	Bell.....	630	15	68.0	+ 0.1	95	14	43	24	40	3.44	+ 0.77	2.20	0.0	3	23	0	8	W. B. Tyler.
Tilden.....	McMullen.....		3	75.3		100	14	43	25	43	1.78		1.50	0.0	2	6	10	6	Wm. Kuykendall.
Uvalde.....	Uvalde.....	937	1	72.0		99	14†	39	25	49	0.37		0.37	0.0	1	25	0	6	F. M. Getzendaner.
Valley Junction§§.....	Robertson.....	289	4								3.40		2.00	0.0	2				T. M. Williams.
Victoria§§.....	Victoria.....	187	11	72.6	- 1.2	92	7	45	9†	42	1.05	- 2.86	0.60	0.0	3				C. C. Zirjacks.
Waco§§.....	McLennan.....	424	20	69.4	+ 1.2	95	14	45	11	36	4.38	+ 1.60	2.54	0.0	3	21	1	9	E. H. Hall.
Waxahachie§§.....	Ellis.....	556	13	67.6	+ 1.7	97	6†	39	26†	48	2.90	+ 0.04	1.75	0.0	3	24	2	5	C. D. Longserre.
Weatherford§§.....	Parker.....	864	20	66.5	+ 0.4	91	14	39	25†	38	1.91	- 0.81	0.86	0.0	4	25	2	4	Miss J. Stickfort.
Wharton§§.....	Wharton.....	105	7	69.0		89	17†	44	10	43	2.73		2.18	0.0	2	24	2	5	Mrs. F. M. Hughes.
Wills Point.....	Van Zandt.....	524	4	71.6		95	3	42	28	41	4.53		1.85	0.0	3	23	4	4	W. W. Gibbard.
Zapata.....	Zapata.....			75.0		98	15	43	11	52	0.12		0.12	0.0	1	12	17	2	F. H. Earnest.

\* Precipitation included in that of the next measurement.

† Temperature extremes are from observed readings of the dry-bulb; means are computed from observed readings.

‡ Also on other dates.

§ Data are from standard instruments not supplied by the U. S. Weather Bureau.

|| Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

¶ Estimated by observer.

||| Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.

\*, †, ‡, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

Stations.	River basins.	Day of month.																																Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
<i>Colorado</i>																																			
Amethyst (near)	Rio Grande																																		
Blanca	Trinchera																																		
Cumbres	Conejos		.01	.06	.90	.74	.38	.28											T.																
Garnett	Rio Grande			.52	.22	.61	.18	.07																											
Hermit	do		.10	.30	.25	.90	.34												T.	T.															
La Veta Pass	Trinchera		.08			.60	T.	.63	.28																										
Manassa	Conejos				.20	.15																													
Platoro	do			T.	.04	.51	.89	.20	.03																										
Saguache	San Luis																																		
San Luis	Culebra				.04	T.	.68	.63	.05	.22																									
Wagon Wheel Gap	Rio Grande																																		
<i>New Mexico</i>																																			
Agricultural College	Rio Grande	.05		.11			.02																												
Alamogordo (near)	do	.13					T.	T.																											
Alamogordo (2)	do		.02							.02																									
Albuquerque	do																																		
Amizett	do			T.	.24	.11	.30	.42	.08																										
Ancho	do	.01		.15																.03															
Aspen Grove Ranch	do																																		
Bateman's Ranch	do			.27		.15	.55																												



TABLE 2.—Daily precipitation for October, 1909. District No. 8—Continued.

Stations.	River basins.	Day of month.																																Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
<i>Texas—Cont'd.</i>																																		
Big Springs.....	Colorado.....							T.	.07										.72														0.79	
Blanco.....	Guadalupe.....									.12									4.30														4.42	
Boerne.....	San Antonio.....																		1.42														1.42	
Booth.....	Brasos.....									.95									.62														1.57	
Boquillas.....	Rio Grande.....																																	
Bowie.....	Trinity.....							.07	.82																									
Brasoria.....	Brasos.....								.10	.50										1.17													1.07	
Brasos.....	do.....								.17	.45										T.													2.13	
Brenham.....	do.....									.34										.48													1.10	
Bridgeport.....	Trinity.....																			1.02													.45	
Brighton.....	Coast.....					.07				.33										.60													0.60	
Brownsville.....	Rio Grande.....																			.24													0.64	
Brownwood.....	Colorado.....			.06					.54	.10								.30	.01														0.31	
Cameron.....	Brasos.....									.85										3.25													.57	
Carmona.....	Neches.....								1.60	1.68										1.00													4.17	
Claytonville.....	Brasos.....							T.	.59											1.80													T.	
Coleman.....	Colorado.....								1.00											2.50													2.39	
Colorado.....	do.....																			1.33													.70	
Columbia.....	Brasos.....								.30	.80										1.65													1.33	
Columbus.....	Colorado.....									.58										1.60													8.00	
Comstock.....	Rio Grande.....																		.09														2.18	
Corpus Christi.....	Coast.....		T.						T.	.26										.05													0.09	
Corsicana.....	Trinity.....								1.08	1.57										1.58													0.31	
Crockett.....	do.....								.76	.37										1.48													4.23	
Cuerpo.....	Guadalupe.....									.35	.02									.60			.02										T.	
Dallas.....	Trinity.....								.08	1.01										.71													4.45	
Danevang.....	Coast.....								.25	.65										T.	1.55												4.22	
Decatur.....	Trinity.....	1.38							2.20											.70													2.15	
Del Rio.....	Rio Grande.....																		.06														4.28	
Dialville.....	Neches.....								.25	1.75										.70													10	
Dublin.....	Brasos.....								.14	1.48										T.	1.11												2.80	
Duval.....	Colorado.....																			3.33													3.61	
Eagle Pass.....	Rio Grande.....																																T.	
Edna.....	Lavaca.....								T.	.30																								0.00
El Paso.....	Rio Grande.....	.02																				.30											20.10	
Encinal.....	Nueces.....																																1.80	
Fairland.....	Colorado.....																	2.80		.50												0.50		
Falfurrias.....	Coast.....					T.				.20																							.08	
Flatonla.....	Guadalupe.....									.23	.44									1.07													T.	
Fort Clark.....	Rio Grande.....																			.08													1.13	
Fort McIntosh.....	do.....																			.42													0.08	
Fort Stockton.....	Pecos.....																																0.42	
Fort Worth.....	Trinity.....								1.33											.49	.38												T.	
Fredericksburg.....	Colorado.....																			.78													T.	
Gainesville.....	Trinity.....								1.00												302.77												0.78	
Galveston.....	Coast.....								.67	.40											.43	.36											4.07	
Gatesville.....	Brasos.....								.60											2.00													5.75	
Georgetown.....	do.....								.10	.04											2.20												7.61	
Gonzales.....	Guadalupe.....								.10	.41											1.61												2.60	
Graham.....	Brasos.....								.85											.48													14	
Grandfalls.....	Pecos.....																																2.48	
Grapevine.....	Trinity.....								2.05												.45												12	
Greenville.....	Sabine.....									1.80											.90												2.24	
Hallettsville.....	Lavaca.....								T.	.27																							1.33	
Haskell.....	Brasos.....								.97	.43										T.	1.03												0.00	
Hebbornville.....	Coast.....																			.50													1.90	
Hempstead.....	Brasos.....																			1.70													0.00	
Henderson.....	Neches.....									1.30											.80												T.	
Hewitt.....	Brasos.....								1.80												142.58												1.70	
Hillsboro.....	do.....																																.05	
Hondo.....	Nueces.....																			1.47													2.15	
Houston.....	Coast.....								2.07	1.19											.05	1.07											T.	
Hubbard.....	Trinity.....																																3.84	
Huntsville.....	do.....																																8.22	
Jewett.....	do.....								1.93												1.07													
Junction.....	Colorado.....																			.99													3.07	
Kaufman.....	Trinity.....								1.58	.13																							.05	
Keene.....	Brasos.....																																2.97	
Kerrville.....	Guadalupe.....																			1.75													1.03	
Knickerbocker.....	Colorado.....								.72												3.18												2.74	
Kopper.....	Brasos.....																																	

TABLE 2.—Daily precipitation for October, 1909. District No. 8—Continued.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
<i>Texas—Cont'd.</i>																																		
San Juanita	Coast									.10																							0.10	
San Marcos	Guadalupe																			a													10.10	
San Saba	Colorado								.32										.85	.54													1.71	
Santa Gertrudes	Coast										.65																						0.68	
Seymour	Brazos						.95	.10											.60	.02													1.67	
Somerville	do							.70										2.00															1.50	
Sonora	Rio Grande																																	
Sugarland	Brazos								1.07										.50															
Taylor	do						T.		.43									2.51	.15												T.	4.71	6.28	
Temple	Brazos							.67	.57										2.20														.01	
Tilden	Nueces								.28										1.50															.06
Uvalde	do																		.37														3.44	
Valley Junction	Brazos										1.40								2.00														1.78	
Victoria	Guadalupe							.25											.20														0.37	
Waco	Brazos							.46	1.38										2.54														3.40	
Waxahachie	Trinity							.18	1.57										1.15														.60	
Weatherford	do							.12	.66										.86	T.													1.05	
Wharton	Colorado								2.18										.55														4.38	
Willis Point	Sabine								1.85										1.01														T.	
Zapata	Rio Grande									T.									.12														.27	
																																		2.90
																																		2.73
																																		4.53
																																		0.12

a signifies 10.00 inches.



TABLE 3.—Maximum and minimum temperatures at selected stations October, 1909. District No. 8, Texas and Rio Grande Valley.

Date.	Colorado.				New Mexico.																Texas.								
	Garnett.		San Luis.		Agricultural College.		Carlsbad.		Fort Stanton.		Mountainair.		Rosendale.		Roswell.		Santa Fe.		Santa Rosa.		Abilene.		Big Springs.		Brownsville.		Corpus Christi.		
Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	76	30	78	30	90	54	89	51	80	51	84	51	77	50	81	52	74	48	88	57	85	56	88	60	86	57	81	62	
2...	75	31	80	27	86	54	87	56	74	41	81	47	70	45	83	52	73	46	87	56	85	54	88	56	83	62	81	69	
3...	73	31	73	34	84	58	87	49	78	44	79	47	70	45	83	47	70	46	86	50	85	56	87	59	86	60	82	66	
4...	66	34	72	33	85	59	84	49	72	37	75	43	71	46	80	47	65	48	82	50	86	59	87	60	86	61	81	66	
5...	65	37	70	34	85	55	84	46	72	37	78	39	69	47	80	43	68	48	80	43	87	57	87	60	86	62	82	74	
6...	55	34	58	34	85	61	86	49	69	42	71	46	69	45	80	46	62	37	67	49	87	59	85	63	88	65	83	76	
7...	55	31	54	32	75	57	84	50	66	37	65	36	63	37	69	41	56	35	71	41	86	59	88	65	87	62	82	69	
8...	39	27	40	29	75	45	73	47	59	31	61	31	58	37	61	42	50	31	62	42	75	47	79	57	88	72	85	76	
9...	54	18	47	8	65	38	65	39	56	30	53	27	60	28	61	38	49	26	60	33	64	47	66	42	80	72	79	53	
10...	66	25	60	24	75	30	83	33	71	31	55	28	64	34	76	29	62	32	77	35	79	47	81	40	79	62	79	58	
11...	65	30	61	28	81	35	87	38	72	29	71	37	70	38	78	35	64	33	77	38	81	46	83	43	88	53	79	54	
12...	66	27	66	27	78	42	79	36	74	34	73	42	68	40	59	37	63	30	65	36	64	39	73	38	85	53	80	59	
13...	72	27	69	30	87	40	91	36	76	31	76	46	74	50	86	33	70	37	85	37	88	47	92	40	86	65	82	68	
14...	71	30	71	30	87	40	92	42	80	40	78	44	76	46	86	44	72	43	88	53	91	65	95	50	88	68	86	69	
15...	69	24	76	27	88	37	91	45	83	30	82	41	74	44	83	40	71	40	86	38	88	57	96	50	88	68	80	67	
16...	68	27	70	30	88	44	93	42	79	31	78	44	73	48	89	37	70	40	88	58	88	64	90	63	85	68	80	74	
17...	65	27	74	31	75	57	87	48	70	37	72	38	64	42	80	47	65	39	80	43	84	69	80	65	85	71	81	77	
18...	61	27	73	30	67	49	73	48	55	36	55	32	51	38	55	44	49	36	59	38	72	50	76	55	86	73	80	75	
19...	60	22	70	26	69	35	67	40	66	35	60	33	60	31	58	43	59	36	68	39	58	48	61	44	85	69	81	67	
20...	67	22	72	28	88	35	88	37	74	30	67	40	70	37	80	35	66	36	78	42	77	50	85	50	88	68	80	68	
21...	70	19	71	24	85	42	87	42	82	29	76	34	74	42	78	38	70	37	82	39	84	62	89	58	88	67	83	72	
22...	70	20	70	22	87	43	91	43	81	31	75	44	74	44	82	39	68	38	79	39	80	60	87	61	87	66	82	71	
23...	70	18	66	46	73	50	82	44	65	32	64	33	62	38	64	39	61	29	68	33	69	48	76	50	84	66	85	63	
24...	66	18	67	20	85	37	76	43	72	24	69	33	66	35	73	31	64	34	78	32	68	44	72	38	76	56	70	55	
25...	66	20	67	20	75	35	72	41	71	31	66	33	63	39	66	39	60	28	70	37	67	47	71	41	77	57	74	55	
26...	67	21	70	20	82	33	82	33	77	34	74	37	72	42	76	32	65	36	73	44	79	46	86	46	86	59	81	60	
27...	68	20	70	19	83	33	79	37	78	25	78	37	70	40	72	31	67	33	74	30	78	47	80	39	85	61	79	69	
28...	65	15	67	19	83	35	81	40	77	25	74	31	68	41	74	35	66	35	79	32	79	52	81	42	84	60	78	72	
29...	68	15	67	26	82	36	90	41	75	27	71	38	69	42	84	36	64	35	79	34	78	57	86	56	85	62	78	73	
30...	62	15	58	24	79	38	87	45	70	31	69	36	65	42	82	40	59	33	76	43	76	61	81	59	87	68	79	73	
31...	60	14	50	22	71	44	80	53	59	36	61	31	60	36	67	47	47	25	66	38	78	55	76	61	87	75	86	75	
Mns	65.2	24.4	66.4	26.9	80.6	43.6	83.1	43.3	72.0	33.5	70.7	38.0	67.5	40.9	75.0	40.0	63.5	36.5	76.1	41.3	78.9	53.4	82.3	52.0	85.1	64.1	80.6	67.3	

## Texas.

Date.	Del Rio.		El Paso.		Fort McIntosh.		Fort Stockton.		Fort Worth.		Galveston.		Halttsville.		Houston.		Lufkin.		Palestine.		Plainview.		San Antonio.		Seymour.		Taylor.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	85	55	89	61	93	60	88	57	89	61	78	68	86	52	85	59	92	48	88	60	84	46	86	55	87	45	86	56
2...	85	52	82	56	93	61	86	51	88	61	82	69	86	52	88	59	91	50	88	60	82	46	86	56	89	48	87	55
3...	87	60	84	61	94	64	85	55	90	59	86	69	87	53	89	60	92	52	90	63	83	46	88	59	89	50	88	60
4...	86	60	84	60	91	64	84	50	90	60	80	67	88	55	90	60	92	49	88	65	82	49	86	60	90	56	89	58
5...	87	60	84	59	93	59	83	54	90	63	81	70	89	57	90	58	93	52	91	62	81	46	88	58	87	55	89	56
6...	87	68	86	63	93	65	86	59	90	66	85	73	91	66	92	63	97	55	92	68	81	44	87	61	90	54	90	63
7...	88	65	76	56	94	68	90	57	90	65	81	73	91	58	92	62	93	55	89	62	77	54	89	64	89	55	89	61
8...	91	66	75	52	96	71	86	48	78	53	82	75	92	69	82	65	86	57	77	60	68	46	87	68	80	50	86	58
9...	73	48	65	43	93	63	69	40	65	50	78	64	71	55	70	58	72	57	63	52	59	35	73	53	75	44	68	48
10...	84	38	74	38	87	48	80	37	77	46	75	62	79	46	79	51	78	40	76	47	74	33	83	43	79	43	82	42
11...	88	42	80	43	94	46	87	41	77	51	79	63	82	53	84	57	78	44	76	52	75	40	86	54	72	46	83	52
12...	83	52	78	46	93	53	84	38	62	44	75	62	87	57	77	56	78	50	65	46	59	26	79	54	62	36	71	49
13...	88	56	84	53	93	63	93	59	85	49	80	74	90	64	84	61	79	48	82	52	89	38	85	57	85	42	85	53
14...	95	56	86	53	99	64	95	50	95	64	80	74	90	65	88	66	89	54	87	65	88	45	93	62	92	51	93	64
15...	94	53	88	48	100	66	93	44	87	59	79	73	89	64	85	67	90	61	86	63	86	45	91	62	87	46	91	62
16...	88	52	87	50	93	65	94	54	87	67	80	75	87	67	84	66	87	62	84	67	89	45	87	68	90	55	86	67
17...	86	70	72	56	93	71	90	62	85	70	81	76	86	69	83	69	85	62	85	67	81	60	86	68	87	58	87	68
18...	79	62	66	48	92	71	77	48	73	62	80	75	79	65	83	68	85	62	80	63	72	42	85	61	74	50	80	62
19...	77	58	69	39	90	65	74	46	62	57	77	68	84	63	85	64	82	67	72	61	57	40	71	61	56	48	69	58
20...	85	55	81	44	88	64	90	45	77	53	77	71	84	67	82	64	83	63	79	60	82	41	81	60	78	47	80	55
21...	88	61	85	44	93	69	92	44	84	62	77	72	76	65	85	65	89	62	82	66	82	40	86	66	81	50	82	65
22...	88	68	86	51	92	71	95	52	83	65	79	73	78	68	85	68	88	62	83	63	78	48	85	67	84	57	81	62
23...	80	58	70	55	89	65	82	57	73	52	79	64	79	66	79	56	82	62	75	54	68	38	75	59	70	47	70	53
24...	74	43	76	45	83	51	81	36	68	43	65	56	73	50	68	50	67	44	66	44	73	34	71	50	71	39	70	46
25...	80	45	72	44	84	48	72	42	73	50	72	62	77	43	75	47	75	40	72	48	66	46	77	46	68	44	76	44
26...	84	40	79	42	89	50	88	40	78	48	77	63	80	53	84	58	79	45	76	48	69	39	81	50	81	40	80	48
27...	85	53	80	44	91	65	79	41	83	50	78	71	83	60	83	58	84	45	81	50	76	36	82	56	77	44	83	54
28...	83	58	83	43	87	66	83	43	81	60	76	64	83	54	79	58	85	48	80	54	77	37	78	57	82	43	79	57
29...	83	57	82	46	89	61	92	52	78	56	76	60	86	65	79	61	84	50	78	53	82	47	79	57	80	52	80	55
30...	85	63	77	50	92	65	90	55	81	64	78	73	87	66	80	66	84	57	81	62	82	47	84	61	83	56	82	66
31...	88	63	68	49	93	73	78	52	83	60	77	66	87	72	74	66	85	65	80	68	75	50	87	71	76	49	86	67
Mns	85.0	56.4	79.0	49.7	91.7	62.4	85.4	48.0	80.7	57.1	78.4	68.8	84.1	60.0	82.7	60.8	84.7	53.7	80.3	58.2	76.7	42.9	83.3	58.8	80.4	48.4	82.2	56.9

Climatological Data for October, 1909.  
DISTRICT No. 9, COLORADO VALLEY,

FREDERICK H. BRANDENBURG, District Editor.

GENERAL CLIMATOLOGICAL CONDITIONS.

The dry spell that began near the middle of the preceding month continued with but little interruption during October. Nearly half of the stations in the district reported no appreciable precipitation, and at the others the amounts were much below the normal. The clear skies were accompanied by high day temperatures, a large diurnal range, and in the southern half of the district by a remarkable excess of sunshine.

TEMPERATURE.

The mean of the 135 stations reporting was 56.6°, or 0.8° above their normal. An excess was general, except in parts of the Gila and lower Colorado valleys. The day temperatures were everywhere higher than the normal, and the nights somewhat cooler. In localities where the nocturnal radiation was greatest, the deficiency in the night temperatures was enough to bring the mean somewhat below the average. There were two cool spells, neither of them being severe. The first occurred on the 9th and the second at the close of the month. Killing frost occurred in all the district on one or the other of these dates, except in the warmer parts of Arizona. By subdivisions the means and departures were: Western Wyoming, 42.0°, +1.7°; western Colorado, 45.8°, +1.5°; eastern Utah, 52.1°, +3.7°; western New Mexico, 55.1°, +0.4°; Arizona, 63.8°, +0.1°. The highest monthly mean was 77.0°, at Mohawk Summit, Ariz., and the lowest, 29.9°, at Corona, Colo. The extremes were 100° at several points in Arizona, and 2° below zero, at Breckenridge, Colo.

PRECIPITATION.

The mean of the 171 stations reporting was 0.24 inch, or 0.64 inch below the normal. A deficiency was general in all parts of the district, and the only material amounts occurred near the Continental Divide in Colorado and New Mexico. In Arizona the month was the driest October but one since the establishment of the service. Scattered showers occurred near the mountains from the 3d to the 7th, and in the northern half of the district on the 30th and 31st. In no case was the fall excessive. At the higher stations in the northern half of the district much of the precipitation was in the form of snow, which, however, was soon melted. By watersheds the means and departures were: Green, 0.24 inch, -0.53 inch; Grand, 0.69 inch, -0.73 inch; San Juan, 0.56 inch, -0.62 inch; Little Colorado, 0.01 inch, -1.03 inches; Gila, 0.04 inch, -0.62 inch; lower Colorado, 0.08 inch, -0.45 inch. The heaviest precipitation was 1.95 inches, at Pitkin, Colo.; 72 stations reported no rainfall, and several others but a trace.

RIVERS.

The rivers in the district fell steadily during the month, but

an ample water supply was reported, owing to the heavy rains of the preceding month.

MISCELLANEOUS.

The amount of sunshine in the southern half of the district was extraordinary; Yuma and Flagstaff reported 98 per cent of the possible sunshine; Phoenix, 97 per cent, and Durango, 88 per cent. At Grand Junction the amount was slightly below the normal. In Arizona the relative humidity was slightly above the normal; in western Colorado it was deficient.

ROOSEVELT DAM TUNNEL COMPLETED.

The tunnel through the Roosevelt dam, on the Salt River Irrigation Project, 70 miles east of Phoenix, Ariz., has been completed. The actual construction work is finished and all that now remains to be done is for the concrete work to become thoroughly set, which will consume about fifteen to twenty days, when it is expected that water will be directed through the tunnel. The large break, on top of the dam, through which water to the depth of 3.0 feet was allowed to run, for supplying the canals and intakes below the dam, will be filled in by the contractors.

The power canal, along the Salt River, from Roosevelt to Intake, Ariz., a distance of 18 miles, will be further lined with concrete for a considerable distance, in order to secure stability and rigidity.

EVAPORATION MEASUREMENTS.

The evaporation measurements, made under the supervision of the U. S. Reclamation Service, at the Granite Reef Dam, on the Salt River, 2 miles below the confluence of the Verde River, were continued during the month of October, 1909.

PUMPING PLANTS, SACATON, GILA RIVER INDIAN RESERVATION.

The pumping plants installed at Sacaton, Ariz., on the Gila River Indian Reservation, by the U. S. Reclamation Service, for irrigation purposes, were practically completed during October. A power line, connecting with the Roosevelt power house, has been run from Mesa to Sacaton, Ariz., whereby sufficient power is utilized for pumping water upon the lands of the Indian Reservation.

EGYPTIAN COTTON EXPERIMENTS.

The Egyptian cotton, planted by the Bureau of Plant Industry, Department of Agriculture, on the Gila River Indian Reservation, 40 miles south of Phoenix, Ariz., early last April, has yielded well. Some picking is still in progress but the bulk of the crop has already been gathered. The results this year are highly satisfactory—in fact, a much larger yield per acre than last year. It is intended to plant a larger acreage next year.



TABLE 1.—Climatological data for October, 1909. District No. 9, Colorado Valley.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.			
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.	Prevailing wind direction.	
Wyoming.																					
Daniel.	Uinta.	6,740	10	39.6	+ 1.7	69	65	12	8†	50	T.	- 0.72	T.	T.	0	16	13	2	nw.	J. M. Van Dervort.	
Dixon.	Carbon.	6,577																		Carey O. Morgan.	
Eden.	Sweetwater.	6,400	3	40.2		72	2†	4	31	52	0.16		0.12	0.0	2	24	4	3	w.	Eden Valley L'd & Ir. Co.	
Fontenelle.	Uinta.	6,083	4	46.2		81	19	14	8†	55	T.		T.	0.0	0	22	5	4	w.	C. W. Holden.	
Green River.	Sweetwater.	7,630																		Geo. H. Maxom.	
Kendall.	Fremont.	7,167	3																	Art. Doyle.	
Pinedale.	do.	7,500	1																	Forest Service.	
Willow Creek Cabin.	do.	7,500	1																	John L. Allen.	
Colorado.																					
Ashcroft.	Pitkin.	9,483	8	39.6		69	1	10	9	42	1.04		0.33	16.0	7					Dan McArthur.	
Breckenridge.	Summit.	9,536	19	37.7 <sup>b</sup>	+ 1.4	66 <sup>b</sup>	1	- 2 <sup>b</sup>	9	45 <sup>b</sup>	0.51 <sup>b</sup>	- 0.91	0.44 <sup>b</sup>	4.5 <sup>b</sup>	2 <sup>b</sup>	4	20	7	nw.	Mrs. J. G. Thompson.	
Cascade.	San Juan.	8,900	3																	San Juan P. & W. Co.	
Chromo.	Archuleta.	7,000	3	43.0		75	2†	11	11	54	0.99		0.66	0.0	3	25	1	5	sw.	Lawrence Nolan.	
Cochetopa.	Saguache.	9,088											0.37	1.0	4	15	15	1	w.	Bessie McDonough.	
Collbran.	Mesa.	6,000	16	50.8		76	2†	17	31	34	0.37	- 0.82	0.14	2.5	5	24	5	2	sw.	A. A. Wood.	
Columbine.	Routt.	8,766											0.25	3.5	1	12	8	11	sw.	Jas. H. Caron.	
Columbine Ranch.	Delta.	6,925														14	3	4	s.	Geo. W. Wade.	
Corona.	Grand.	11,660	2	29.9		56	2	4	10†	24	1.30		0.50	17.5	7				w.	U. S. Weather Bureau.	
Crawford (near).	Montrose.	6,600		49.6		75	1	16	31	37	0.92		0.34	0.8	7	20	7	4		C. W. Roe.	
Crested Butte.	Gunnison.	8,867											0.35	0.0	4	27	2	2	w.	Charles L. Ross.	
De Beque.	Mesa.	4,935																		C. M. Paine.	
Delta.	Delta.	4,965	18	54.8	+ 4.9	85	2†	22	9	58	0.42	- 0.23	0.22	0.0	4	26	5	0	sw.	E. M. Getts.	
Dillon.	Summit.	8,800											0.30	8.0	2	21	8	2	n.	Harry T. Hamilton.	
Dolores.	Dolores.	6,500		53.8		78	3	29	28†	39	0.31		0.21	0.5	2	21	9	1	n.	Geo. R. Simmons, jr.	
Dunkley.	Routt.	7,430	3																	Geo. W. Dunkley.	
Durango.	La Plata.	6,534	16	49.9	+ 1.0	74	1	22	9	42	0.44	- 1.18	0.21	0.0	5	18	10	3	nw.	U. S. Weather Bureau.	
Eagle.	Eagle.	6,598	4	44.0		80	3	15	8†	51	0.84		0.41	4.0	3	24	6	1	w.	J. M. Witteman.	
Eureka.	San Juan.	10,000	2																	San Juan P. & W. Co.	
Fruita.	Mesa.	4,510	10	51.8	+ 2.2	88	5	21	9	50	0.12	- 0.98	0.12	0.0	1	20	11	0		J. B. Willson.	
Gladstone.	San Juan.	10,400	3																	San Juan W. & P. Co.	
Glenwood Springs (near).	Garfield.	5,823	11										0.03	- 1.15	0.03	0.2	1	30	1	w.	E. A. O'Neill.
Grand Junction.	Mesa.	4,608	18	55.2	+ 1.9	84	2	28	31	41	0.04	- 0.89	0.32	T.	3	23	6	2	e.	U. S. Weather Bureau.	
Grand Lake.	Grand.	8,153											0.55	T.	1	22	1	8		Mrs. Belle Kauffman.	
Grand Valley.	Garfield.	5,089	17	51.6	+ 1.8	83	2†	18	9	53	0.17	- 1.04	0.09	0.2	2	21	6	4		David Evans.	
Gunnison.	Gunnison.	7,670	16	41.4	0.0	74	1	10	31	54	0.69	+ 0.08	0.37	T.	5	18	7	6	sw.	Clarence Adams.	
Hayden.	Routt.	6,337																		C. W. Harkness.	
Hesperus.	La Plata.	8,870	11										0.82	- 0.64	0.45	1.0	4	26	5	0	John S. Spear.
Horsely.	Montrose.	8,700																		Lawrence J. Finch.	
Ignacio.	La Plata.	6,425											0.40		0.30	0.0	6	20	6	s.	Elizabeth Schalles.
Ironton.	Ouray.	10,000																		P. H. Foley.	
Kremmling (near).	Grand.	7,337	1	43.4		73	3	9	9	52	0.07		0.05	1.0	3	18	8	5		H. A. Howe.	
Lake City.	Hinsdale.	8,686	4	42.6		69	1†	11	31	43	1.07		0.41	T.	6	21	8	2	s.	W. H. Ogle.	
Lay.	Routt.	6,190	15	43.2	- 0.7	77	1†	10	9†	55	1.13	+ 0.45	1.00	1.0	3	19	3	9	w.	A. G. Wallihan.	
Lujane.	Montrose.	6,620	3	51.8		78	1	18	31	40	0.71		0.24	T.	5	18	11	2	sw.	T. T. Richards.	
Mancos.	Montezuma.	6,960	10	49.2	+ 1.9	75	1†	16	9	47	0.54	- 0.41	0.34	T.	2	22	7	2	nw.	B. M. Krumpantzky.	
Marble.	Gunnison.	7,951		44.2		76	1	15	9	45	1.32		0.60	6.0	6	20	9	2	ne.	Homer Harrington.	
Marshall Pass.	Saguache.	10,846	6										0.60	17.0	5	23	5	3	w.	William D. Lillard.	
Meeker.	Rio Blanco.	6,182	17	44.2	+ 0.4	77	3	13	31	53	0.61	- 0.74	0.50	1.5	2	23	7	1	sw.	T. Baker.	
Montrose (near).	Montrose.	5,811	20	48.8	+ 0.4	83	1	17	30	51	0.14	- 0.70	0.10	0.0	2	11	20	0		R. Butterfield.	
Nast.	Pitkin.	7,953		43.8		70	1	18	25	42	0.72		0.28	2.0	3	21	9	1	w.	Arthur Hanthorn.	
Pagoda.	Routt.	6,500	18	45.5	+ 1.4	78	5†	16	9	58	0.59	- 1.08	0.46	2.0	2	28	2	1		Shaw Brothers.	
Pagosa Springs.	Archuleta.	7,108	2	43.4		74	3	12	29	55	1.76		1.23	0.0	4	20	6	5	sw.	E. T. Walker.	
Paonia.	Delta.	5,694	8	53.8		83	3	23	31	41	0.79		0.30	T.	5	17	12	2	sw.	J. M. Underwood.	
Parshall.	Grand.												0.17	0.0	3					F. A. Field.	
Pitkin.	Gunnison.	9,500											0.78	3.5	4	26	3	2	s.	Mrs. Maggie Cammann.	
Rangely.	Rio Blanco.	5,050	10	50.1 <sup>b</sup>		81 <sup>b</sup>	3	15 <sup>b</sup>	31	46 <sup>b</sup>	0.11 <sup>b</sup>	- 0.44	0.10	0.1 <sup>b</sup>	2 <sup>b</sup>	12 <sup>b</sup>	9 <sup>b</sup>	2 <sup>b</sup>	w. <sup>b</sup>	Mrs. C. P. Hill.	
Redcliff.	Eagle.	8,695	14										0.53	10.0	2	23	4	4		Dorothea Greiner.	
Rico.	Dolores.	8,824	8																	Clinton B. Smith.	
River Portal.	Montrose.	6,570	3	47.9		76	1†	20	31	42	1.08		0.38	0.5	6	17	10	4		J. Dill.	
Sapinero.	Gunnison.	8,125	9	42.4		70	2	17	9	43	1.60		0.70	6.4	8	26	3	2	w.	W. F. Irving.	
Silt.	Garfield.	5,441	13	50.2	+ 0.5	82	3	16	9	51	0.17	- 0.92	0.09	0.0	2	9	20	2	w.	W. S. Park.	
Silverton (1).	San Juan.	9,285	5	41.0 <sup>a</sup>		74 <sup>a</sup>	14	11 <sup>a</sup>	23	62 <sup>a</sup>						27	2	2	sw. <sup>a</sup>	V. E. Kerr.	
Silverton (2).	do.	9,400	3																	San Juan P. & W. Co.	
Spruce Lodge.	Grand.	9,600	1										0.51	13.5	4					H. J. Wills.	
Steamboat Springs.	Routt.	6,683		41.7		80	3	7	9	60	0.74		0.48	3.0	2	29	1	1		M. Elliot Houston.	
Tacoma.	La Plata.	7,300	3																	San Juan P. & W. Co.	
Terminal Dam.	do.	8,300	3																	Do.	
Uncompahgre Plateau.	Montrose.	8,400																		Martin Esser.	
Whitepine.	Gunnison.	9,500	8	37.7		65	3	5	9	35	0.89		0.30	12.0	4	25	2	4	sw.	C. E. Macy.	
Yampa.	Routt.	8,000											0.09	0.0	1	20	5	6	nw.	Percy A. Hughes.	
Utah.																					
Aneth.	San Juan.	4,800	8																	Maude A. Palmer.	
Baker.	do.	7,560																		E. H. Wolf.	
Basin.	Grand.	9,500																		James Jeffa.	
Castle Dale.	Emery.	5,500	10	50.4		76	12	16	30	46	0.00		0.00	0.0	0	25	5	0		H. J. Cooper.	
Dragon.	Uinta.	5,500	1	49.6		82	6	12	31	59	0.20		0.20	2.0	1	20	9	2	n.	U. S. Forest Service.	
Dyer Mountain.	do.	10,000																			

TABLE 1.—Climatological data for October, 1909. District No. 9—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.
Utah—Cont'd.																			
Tenasdale	Wayne	7,000	1	50.9		76	4	16	31	40	0.00		0.00	0.0	0	19	0	9	Josiah Shurtz.
Theodore	Wasatch	5,507	4	49.4		77	14	20	25	50	0.09		0.09	0.0	1	15	12	4	L. Claire Winslow.
Tropic	Garfield	7,000	12	52.0	+ 4.9	82	14	23	31	48	T.	- 0.68	T.	0.0	0	16	13	2	E. P. Bolton.
Vernal	Uinta	5,380	14								0.15		0.15	0.0	1	7	1	2	Joab Collier.
Wellington	Carbon	5,540	10	44.9		73	15	15	31	46	0.00		0.00	0.0	0				Melville Branch.
New Mexico.																			
Blackrock	McKinley		2	53.4		81	3	18	31	47	0.00		0.00	0.0	0	31	0	0	Wm. J. Oliver.
Bloomfield	San Juan	5,500	13	51.3	- 0.2	84	1	16	9	49	0.18	- 0.54	0.06	0.0	6	19	10	2	Fred Le Clerc.
Cambray	Luna	4,215	11								0.00	- 0.69	0.00	0.0	0	31	0	0	Agent, Southern Pac. Ry.
Chiff	Grant	4,470	11	56.7	- 1.7	85	16	32	16	47	0.33	- 0.81	0.27	0.0	2				T. J. Clark, sr.
Columbus	Luna	4,054									0.04		0.01	0.0	4	26	0	5	Agent, E. P. & S. W. R. R.
Deming	do.	4,333	33	62.5		89	2	31	9	48	0.89	+ 0.20	0.89	0.0	1	25	6	0	Agent, Southern Pac. Ry.
Dulce	Rio Arriba	6,767	3	46.4		75	1	15	23	55	0.62		0.60	0.0	2	24	1	6	W. A. Fuller.
Fort Bayard	Grant	6,152	35	58.5	+ 1.7	81	1	32	8	43	0.03	- 1.09	0.03	0.0	1	30	1	0	U. S. A. Gen'l Hospital.
Fort Wingate	McKinley	6,997	46	52.0	+ 0.0	79	15	24	31	44	T.	- 1.01	T.	0.0	0	25	5	1	Medical Corps, U. S. A.
Frisco	Socorro	5,800	3								0.02	- 0.32	0.02	0.0	1	23	7	1	John R. Milligan.
Fruitland	San Juan	4,800	17	52.5	+ 1.5	86	2	18	30	52	0.02	- 0.36	0.00	0.0	0	28	3	0	Cyril Jas. Collier.
Gage	Luna	4,486	3	65.1		90	1	36	31	44	0.00	- 0.36	0.00	0.0	0	28	3	0	Agent, Southern Pac. Ry.
Hachita	Grant	4,504									0.53		0.20	0.0	4	28	2	1	Agent, E. P. & S. W. R. R.
Hermance	Luna	4,451									0.10		0.10	0.0	1				Do.
Lordsburg	Grant	4,245	10	62.0	+ 0.8	90	16	32	31	50	0.70	+ 0.03	0.45	0.0	2	22	3	6	Agent Southern Pac. Ry.
Luna (near)	Socorro	7,300	5	45.6		74	21	15	31	57	0.03		0.03	0.0	1	21	10	0	C. B. Martin.
Manuelito	McKinley	6,252	5	54.7		84	19	12	28	68	0.00		0.00	0.0	0	21	7	3	W. A. L. Tarr.
Mimbres	Grant	5,007	3								0.55		0.39	0.0	3	26	5	0	Charles Dennis.
Pratt	do.	4,415									0.00		0.00	0.0	0	31	0	0	Agent, E. P. & S. W. R. R.
Redrock	do.	4,150	5								0.07		0.07	0.0	1	26	5	0	Robt. H. Woods.
Rodeo	do.	4,118	1								T.		T.	0.0	0	31	0	0	Agent, E. P. & S. W. R. R.
Rosa	Rio Arriba	6,000	5								0.00		0.00	0.0	0	22	9	0	B. A. Candelario.
Arizona.																			
Allaire's Ranch	Cochise	4,184	13								0.00	- 0.38	0.00	0.0	0	29	2	0	Thos. Allaire.
Arizona Canal Dam	Maricopa	1,372		72.1	- 0.6	95	1	38	31	41	0.00	- 0.46	0.00	0.0	0	23	8	0	U. S. Reclamat'n Service.
Astee	Yuma	492	9	71.4	- 5.0	100	23	44	31	51	0.00	- 0.12	0.00	0.0	0	28	0	3	Agent, Southern Pac. Ry.
Benson	Cochise	3,523	26	64.4	- 1.5	91	1	32	31	52	0.00	- 0.66	0.00	0.0	0	26	5	0	Do.
Bisbee	do.	5,500	19	62.0	+ 0.3	83	15	42	9	33	T.	- 1.13	T.	0.0	0	31	0	0	Rev. J. G. Pritchard.
Bonita	Graham	4,916	30								0.00	- 0.62	0.00	0.0	0	28	0	3	A. Johnson & Co.
Bowie	Cochise	3,756	9	66.0	+ 1.5	93	16	35	10	47	0.00	- 0.44	0.00	0.0	0	31	0	0	Agent, Southern Pac. Ry.
Buckeye	Maricopa	980	17	69.2	+ 0.3	99	1	38	31	56	0.00	- 0.44	0.00	0.0	0	31	0	0	H. E. Kell.
Casa Grande	Pinal	1,396	28								0.00		0.00	0.0	0	30	1	0	Agent, Southern Pac. Ry.
Casa Grande Ruins	do.	1,422	1	69.6		98	1	37	31	52	0.00		0.00	0.0	0	31	0	0	F. Pinkley.
Cavecreek	Maricopa	1,520	2	67.7		97	11	39	29	55	0.00		0.00	0.0	0	31	0	0	E. H. Howard.
Chin Lee	Apache	6,090	1	52.4		85	1	17	31	54	0.00		0.00	0.0	0	26	4	1	Fr. L. Osterman, O. F. M.
Chilsons Mill	Graham	8,000	4	55.2		81	1	27	31	50	0.00		0.00	0.0	0	26	5	0	H. R. Charlson.
Clifton	do.	3,584	17	67.5		91	1	45	26	39	0.00	- 1.00	0.00	0.0	0	29	2	0	W. B. Cramer.
Cline	Gila	2,300	8								0.00		0.00	0.0	0	31	0	0	W. M. Clanton.
Cochise	Cochise	4,219	11	58.6	- 4.7	90	1	32	7	56	0.00	- 0.36	0.00	0.0	0	31	0	0	Agent Southern Pac. Ry.
Columbia	Yavapai	1,900	9	74.6		98	9	44	30	40	0.00	- 0.58	0.00	0.0	0	27	4	0	M. J. Nolan.
Congress	do.	3,688	13	69.6	+ 0.3	91	23	49	31	28	0.00	- 0.44	0.00	0.0	0	29	2	0	Assayer, Congress Mine.
Dos Cabezas	Cochise	5,250	1	58.2		91	1	31	31	44	0.00		0.00	0.0	0	30	1	0	N. Erickson.
Douglas	do.	3,930	6	63.3		93	10	34	28	54	0.11		0.11	0.0	1	31	0	0	Dr. F. T. Wright.
Dudleyville	Pinal	2,204	18	66.0	+ 0.1	92	1	41	10	48	0.00	- 0.78	0.00	0.0	0	26	4	1	G. F. Cook.
Flagstaff (1)	Cocconino	6,907	17	46.7	+ 2.0	75	14	12	31	50	T.	- 1.89	T.	0.0	0	27	4	0	U. S. Weather Bureau.
Flagstaff (2)	do.	7,452	4	45.6		68	1	15	31	45	T.		T.	0.0	0	27	4	0	C. C. Moers.
Flagstaff (3)	do.	7,500	1	44.0		75	26	6	31	57	0.00		0.00	0.0	0	21	10	0	U. S. Forest Service.
Florence	Pinal	1,504	9	69.3		96	10	41	31	39	0.00	- 0.54	0.00	0.0	0	30	1	0	Agent, P. & E. R. R.
Fort Apache	Navajo	5,200	30	56.8	+ 1.4	85	2	27	9	50	0.00	- 1.13	0.00	0.0	0	30	1	0	Post Surgeon.
Fort Huachuca	Cochise	5,100	23	66.2	+ 3.4	89	14	40	31	36	0.00	- 0.69	0.00	0.0	0	31	0	0	Do.
Fort Mohave	Mohave	604									0.00		0.00	0.0	0				A. F. Ducloux.
Gilabend	Maricopa	737	18	72.4	- 0.5	100	2	39	30	50	0.00	- 0.36	0.00	0.0	0	30	1	0	Agent, Southern Pac. Ry.
Globe	Gila	3,525	8	65.3		90	14	39	31	45	0.00		0.00	0.0	0	26	5	0	Dr. B. G. Fox.
Grand Canyon (1)	Cocconino	6,866	5	46.2		74	1	19	30	46	0.00		0.00	0.0	0	21	2	8	Agent, Santa Fe R. R.
Grand Canyon (2)	do.	3,676	2								0.00		0.00	0.0	0				C. C. Spaulding.
Greer	Apache	9,200									0.00		0.00	0.0	0	22	7	2	Mrs. M. Butler.
Holbrook	Navajo	5,069	18	55.0	+ 0.3	85	3	20	31	57	0.00	- 0.68	0.00	0.0	0	30	1	0	Thorwald Larson.
Intake	Gila	2,230	4								0.00		0.00	0.0	0	31	0	0	A. H. Neal.
Jerome	Yavapai	4,743	12	65.0	+ 3.1	84	23	39	31	34	0.00	- 0.98	0.00	0.0	0	28	3	0	Dr. L. A. Hawkins.
Keams Canyon	Navajo		4	51.8		78	15	24	9	45	0.00		0.00	0.0	0	31	0	0	L. R. Ballard.
Kingman	Mohave	3,326		61.2		91	14	33	4	52	0.00		0.00	0.0	0	26	5	0	G. R. Gooding.
Maricopa	Pinal	1,186	29	70.1	- 1.9	98	24	39	31	49	0.00	- 0.43	0.00	0.0	0	31	0	0	Agent, Southern Pac. Ry.
Mesa	Maricopa	1,244	14	71.2	+ 1.4	98	23	35	31	54	0.00	- 0.48	0.00	0.0	0	27	4	0	C. L. Diehl.
Mohawk Summit	Yuma	538	9	77.0	- 0.1	98	2	52	19	42	0.00	- 0.21	0.00	0.0	0	28	3	0	Agent, Southern Pac. Ry.
Natural Bridge	Gila	4,990	20								0.00	- 1.30	0.00	0.0	0	24	7	0	D. G. Goodfellow.
Nogales	Santa Cruz	3,830	5	64.2		94	21	34	31	54	0.00		0.00	0.0					



TABLE 1.—Climatological data for October, 1909. District No. 9—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.							Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		
Arizona—Cont'd.																				
Thatcher.....	Graham.....	2,800	....	62.6	.....	96	3	32	9	58	0.00	.....	0.00	0.0	0	25	6	0	nw.	Prof. J. H. Larson.
Tombstone.....	Cochise.....	4,550	14	65.4	+ 1.2	90	21	42	8†	40	0.05	- 0.33	0.05	0.0	1	30	1	0	.....	F. N. Walcott.
Tuba.....	Cocconino.....	4,500	9	55.6	.....	84	1	23	31	45	0.10	.....	0.10	0.0	1	17	14	0	ne.	G. H. Kraus.
Tucson (1).....	Pima.....	2,390	29	67.7	+ 1.8	96	21	36	31	52	0.00	- 0.53	0.00	0.0	0	16	15	0	nw.	University of Arizona.
Tucson (2).....	do.....	2,380	1	64.8	.....	100	27	33	23†	61	0.00	.....	0.00	0.0	0	31	0	0	sw.	H. G. Brown.
Upper San Pedro.....	Cochise.....	5,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	B. T. Stuart.
Vail.....	Pima.....	3,421	11	62.4	- 8.0	89	2	39	12†	44	0.00	- 0.19	0.00	0.0	0	31	0	0	se.	Agent, Southern Pac. Ry.
Walnut Grove.....	Yavapai.....	3,649	19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	J. O. Carter.
Wickenburg.....	Maricopa.....	2,072	2	70.1	+ 5.5	96	1	42	31	46	0.00	- 0.16	0.00	0.0	0	31	0	0	sw.	Agent, P. & P. R. R.
Willcox.....	Cochise.....	4,164	29	59.8	- 1.5	90	2†	30	29	54	0.00	- 0.57	0.00	0.0	0	27	0	4	sw.	Agent, Southern Pac. Ry.
Williams.....	Cocconino.....	6,750	10	56.0	.....	80	3	28	31	48	0.03	.....	0.02	0.0	2	29	0	2	ne.	H. Victor.
Winslow.....	Navajo.....	4,853	1	58.0	.....	89	15	20	31	53	0.00	.....	0.00	0.0	0	27	4	0	.....	L. C. Henning.
Yarnell.....	Yavapai.....	4,700	11	.....	.....	.....	.....	.....	.....	.....	.....	- 0.74	0.00	0.0	0	31	0	0	sw.	E. L. Bartholomew.
Yuma (1).....	Yuma.....	141	30	70.2	- 3.2	96	11	45	28	44	0.00	- 0.19	0.00	0.0	0	30	1	0	n.	U. S. Weather Bureau.
Yuma (2).....	do.....	150	2	67.8	.....	97	11	32	31	50	0.00	.....	0.00	0.0	0	29	2	0	sw.	E. L. Crane.
Nevada.																				
Caliente.....	Lincoln.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Las Vegas.....	Clark.....	2,033	2	63.0*	.....	90*	11†	30*	30	55	0.00	.....	0.00	0.0	0	.....	.....	.....	nw.	Agent, Salt Lake Route.
Logan.....	do.....	1,700	3	63.8	.....	91	23	29	31	47	0.00	.....	0.00	0.0	0	14	14	3	n.	Roy M. Filcher.

\* Precipitation included in that of the next measurement.

\*\* Temperature extremes are from observed readings of the dry-bulb; means are computed from observed readings.

† Also on other dates.

‡ Data are from standard instruments not supplied by the U. S. Weather Bureau.

§ Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

|| Estimated by observer.

¶ Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.

\*, †, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

TABLE 2.—Daily precipitation for October, 1909. District No. 9, Colorado Valley.

Stations.	River basins	Day of month.																															Total	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Wyoming.																																		
Daniel.....	Green.....							T.												T.											T.		T.	
Dixon.....	do.....																																0.16	
Eden.....	do.....				.12	.04																												
Fontenelle.....	do.....																																	
Green River.....	do.....				T.																												T.	
Kendall.....	do.....																																	
Pinedale.....	do.....																																	
Willow Creek Cabin.....	do.....																																	
Colorado.																																		
Ashcroft.....	Grand.....				T.	.14	.01	.33	.23	.10	.05																					.18	1.04	
Breckenridge.....	do.....				T.			.44	T.	T.																						.07	0.51	
Cascade.....	San Juan.....							*	.66	.27	.06																						0.99	
Chromo.....	do.....				.37	.11	.03												T.													.01	0.52	
Cochetopa.....	Gunnison.....				.02	T.	.07	.10	.04																								.14	0.37
Collbran.....	Grand.....					T.																											.25	0.25
Columbine.....	Yampa.....																																	
Columbine Ranch.....	Gunnison.....																																	
Corona.....	Grand.....					.06	.06	.50	.22		.08	.04																				.34	1.30	
Crawford.....	Gunnison.....				.06	.02	.24	.34	.22	.01																						.03	0.92	
Crested Butte.....	do.....				.03	.35	.30																							.10		0.80		
De Beque.....	Grand.....																																	
Delta.....	Gunnison.....					.01	.09	.10	.22																							T.	0.42	
Dillon.....	Grand.....					T.		.30	T.																							.20	0.50	
Dolores.....	Dolores.....						.10	.21											T.												T.		0.31	
Dunkley.....	Yampa.....																																	
Durango.....	San Juan.....		.03	.13	.16	T.	.07	.05											T.														0.44	
Eagle.....	Grand.....				.18	.25																										.41	0.84	
Eureka.....	San Juan.....																																	
Fruita.....	Grand.....				T.	T.		T.	T.																							T.	.12	0.12
Gladstone.....	San Juan.....																																	
Glenwood Springs.....	Grand.....																															T.	.03	0.03
Grand Junction.....	do.....				.01	T.		.01	T.																						.02		0.04	
Grand Lake.....	do.....					T.		.55	T.																								0.55	
Grand Valley.....	do.....					.09	T.		T.																							.08	0.17	
Gunnison.....	Gunnison.....				T.	.08	.10	.37	.10	T.									.04													T.	0.69	
Hayden.....	Yampa.....																							</										



TABLE 2.—Daily precipitation for October, 1909. District No. 9—Continued.

[illegible]





TABLE 3.—Maximum and minimum temperatures at selected stations, October, 1909. District No. 9, Colorado Valley.

Date.	Wyoming.				Colorado.										Utah.										New Mexico.					
	Daniel.		Green River.		Durango.		Grand Junction.		Gunnison.		Meeker.		Steamboat Springs.		Emery.		Fort Duchesne.		Hite.		Moab.		St. George (Experiment station).		Fort Bayard.		Fort Wingate.			
Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1...	64	22	62	30	74	40	81	49	74	49	75	30	77	25	.....	.....	78	35	86	49	84	42	84	46	81	51	75	48		
2...	65	24	63	40	74	37	84	56	72	27	75	30	79	25	.....	.....	80	38	88	55	86	50	81	53	81	52	78	42		
3...	68	28	64	46	72	38	79	55	62	27	77	34	80	27	.....	.....	80	38	85	65	83	56	77	58	79	50	74	42		
4...	67	29	69	41	67	44	75	54	65	35	67	41	75	32	.....	.....	68	26	83	52	82	55	76	40	75	47	70	30		
5...	69	33	66	39	71	45	77	56	65	36	71	40	71	36	.....	.....	75	36	80	50	84	44	77	38	79	48	71	32		
6...	60	24	67	32	60	40	66	52	60	20	59	34	62	33	.....	.....	70	38	78	51	84	45	77	38	75	40	68	30		
7...	45	28	57	36	53	35	63	45	49	34	48	24	51	36	.....	.....	66	39	74	53	70	50	74	48	73	33	70	31		
8...	42	12	50	14	50	27	55	37	47	23	53	23	43	22	.....	.....	55	24	67	44	68	38	71	46	75	32	53	29		
9...	58	22	62	24	60	22	60	30	48	14	53	17	50	7	.....	.....	62	22	72	41	68	27	77	35	74	33	61	32		
10...	59	25	69	32	69	30	68	35	49	18	62	22	60	22	.....	.....	72	28	80	41	74	31	81	38	71	33	64	34		
11...	58	28	64	15	68	33	72	34	56	20	58	24	55	32	.....	.....	75	33	82	44	78	34	83	39	74	37	69	31		
12...	60	19	67	19	70	33	74	35	62	22	55	22	54	18	.....	.....	76	32	84	43	80	34	80	44	75	39	70	34		
13...	63	20	70	23	73	33	78	37	62	22	65	25	56	19	.....	.....	75	31	85	45	83	37	84	38	79	40	76	37		
14...	64	28	72	35	73	35	77	38	66	20	66	26	63	19	.....	.....	77	32	86	45	83	38	84	40	80	45	77	35		
15...	65	24	75	27	73	35	76	45	64	23	68	28	71	17	.....	.....	76	30	85	44	84	35	84	38	81	50	79	35		
16...	64	18	73	27	70	37	74	47	63	24	72	29	72	18	.....	.....	71	31	82	45	81	37	79	39	80	47	69	40		
17...	64	22	73	26	69	40	76	38	65	19	65	26	68	24	.....	.....	75	35	84	46	82	38	83	38	75	50	65	37		
18...	63	15	67	28	68	33	72	42	60	21	66	21	69	27	.....	.....	70	28	82	46	79	34	79	38	65	32	65	32		
19...	60	18	81	31	66	32	73	37	56	19	67	26	68	15	.....	.....	78	30	80	46	77	39	83	38	70	33	66	30		
20...	58	20	73	29	70	29	72	35	54	22	61	25	58	19	.....	.....	70	27	83	41	77	37	79	36	68	37	70	43		
21...	56	12	57	19	69	29	67	44	59	24	68	15	69	10	.....	.....	63	23	78	42	76	32	76	39	79	45	73	35		
22...	58	14	65	26	71	35	69	33	63	12	69	20	59	17	.....	.....	65	25	82	43	77	31	81	32	78	47	67	37		
23...	65	16	70	15	66	31	72	38	64	18	65	18	67	10	.....	.....	65	22	84	42	75	29	82	32	75	45	71	30		
24...	64	17	64	24	68	31	66	30	65	14	65	17	63	11	.....	.....	67	22	76	38	74	28	79	30	79	47	70	30		
25...	62	15	70	22	67	31	66	34	62	15	64	16	63	11	.....	.....	64	21	77	39	75	28	79	31	73	38	70	34		
26...	64	17	65	32	71	29	69	33	63	16	65	22	63	11	.....	.....	67	24	79	37	75	31	78	28	74	45	70	34		
27...	62	13	74	22	69	31	70	35	62	11	69	21	67	14	.....	.....	68	22	76	36	72	28	76	26	75	42	73	29		
28...	63	13	75	22	70	30	60	38	66	12	69	19	70	10	.....	.....	67	22	75	36	78	27	82	31	70	45	70	32		
29...	48	16	56	24	63	27	72	37	65	14	55	29	65	13	.....	.....	68	28	77	44	78	55	75	41	72	43	66	49		
30...	43	12	40	19	58	27	67	34	64	11	60	26	63	13	.....	.....	58	24	69	37	78	26	65	38	68	40	59	39		
31...	43	13	46	14	52	22	48	28	62	10	50	13	40	21	.....	.....	51	16	62	32	63	26	64	25	68	38	66	24		
Means	59.5	19.8	65.4	26.9	66.9	32.9	70.5	40.0	61.1	21.7	63.9	24.6	63.6	19.8	.....	.....	69.4	28.5	79.4	44.3	77.7	36.8	78.8	38.1	74.9	42.1	69.2	34.7	34.7	

Date.	Arizona.																								Logan, Nev.	
	Bisbee.		Flagstaff.		Fort Apache.		Grand Canyon.		Parker.		Phoenix.		Prescott.		St. Michaels.		San Carlos.		Tucson.		Yuma.					
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.				
1.	80	56	69	33	83	44	74	38			95	61	77	44	76	38			94	57	93	57	89	52		
2.	78	57	67	42	85	47	71	37			94	64	78	41	74	41			92	64	87	57	81	48		
3.	75	53	62	34	77	51	72	38			84	60	69	38	75	40			87	60	82	56	79	51		
4.	76	51	62	30	79	41	60	28			83	56	68	35	73	35			88	50	84	48	79	41		
5.	77	51	63	26	80	40	60	28			87	55	71	31	74	36			90	46	88	50	82	45		
6.	74	55	59	28	73	42	54	26			84	55	68	35	62	39			85	50	90	52	81	44		
7.	67	47	61	33	72	40	60	29			85	54	68	40	59	37			82	45	90	54	83	44		
8.	68	45	57	26	68	34	53	24			86	53	67	39	49	27			83	48	89	53	78	55		
9.	65	42	60	25	73	27	53	25			84	56	68	27	57	22			83	42	89	58	84	40		
10.	72	43	67	27	79	31	63	28			91	54	75	28	67	27			89	43	92	58	89	44		
11.	77	47	70	28	80	34	68	28			92	55	76	33	66	29			92	44	96	55	90	48		
12.	77	50	70	32	80	35	56	24			92	59	76	40	69	30			92	45	92	53	85	46		
13.	76	57	70	29	81	36	64	26			92	58	78	38	69	33			92	45	93	52	90	47		
14.	79	51	75	28	84	34	64	22			92	54	79	35	72	33			92	45	96	52	90	43		
15.	83	52	71	27	84	37	68	24			91	55	78	36	74	34			94	42	95	53	87	41		
16.	75	56	62	29	78	38	68	24			82	59	66	40	69	35			87	59	81	56	87	51		
17.	67	46	66	29	75	33	70	26			81	53	72	33	66	33			80	43	86	50	88	46		
18.	69	47	68	26	77	34	71	26			88	54	75	36	63	33			87	45	88	50	86	45		
19.	71	44	63	29	75	36	70	24			90	55	67	36	65	31			89	54	89	50	87	44		
20.	79	48	67	29	79	34	73	30			88	54	75	31	65	29			91	45	86	48	85	45		
21.	82	49	68	30	83	35	73	30			91	52	75	36	72	33			96	46	85	48	80	44		
22.	80	52	66	22	83	37	68	26			89	49	77	32	67	31			68	45	90	46	86	43		
23.	71	53	67	28	79	34	68	39			94	53	80	33	65	25			90	46	93	52	91	44		
24.	72	47	71	24	80	35	70	26			93	61	79	31	66	26			90	61	95	58	85	50		
25.	78	47	72	27	81	31	71	26			91	57	78	31	64	25			92	47	95	52	86	42		
26.	79	50	72	22	80	31	70	26			89	52	78	32	68	25			93	44	91	48	85	39		
27.	76	50	71	22	80	30	70	24			88	51	79	31	69	25			90	43	90	48	81	38		
28.	76	48	64	24	78	32	68	22			87	48	79	30	68	24			90	44	88	45	83	40		
29.	72	51	58	38	75	30	64	22			82	52	68	34	64	22			86	44	80	52	76	40		
30.	68	48	53	30	75	28	58	19			76	50	62	32	59	32			81	44	79	47	69	36		
31.	69	42	56	12	69	27	59	19			76	44	63	20	52	20			78	36	79	46	70	29		
Means...	74.5	49.5	65.4	28.0	78.2	35.4	65.5	26.9			87.6	54.6	73.2	34.1	66.4	30.6			87.8	47.6	88.7	51.7	83.6	44.0		

**Climatological Data for October, 1909.**  
**DISTRICT No. 10, GREAT BASIN.**

ALFRED H. THIESSEN, District Editor.

GENERAL CLIMATOLOGICAL CONDITIONS.

The weather was unusually mild and pleasant throughout the Great Basin during October, and very beneficial to all interests. The temperature averaged somewhat above normal, and the precipitation below normal. Sunshine was abundant, there being an unusually large proportion of clear days. The winds were light, which together with the high temperatures, combined to render a generally hazy atmosphere.

TEMPERATURE.

The monthly mean temperature for the district, as a whole, averaged 50.1°, which was 0.9° above the normal; and ranged from 74.8° at Bagdad, Cal., to 32.6° at Truckee, Cal.

The monthly mean temperatures were above normal in all portions of the district, except in Oregon, the central portion of California, and locally in Nevada and Utah. The divergence of the mean temperatures from the normal were not at all uniform, ranging from 5.6° above normal at Ely, Nev., to 12.6° below at Truckee, Cal.

As a rule the highest mean temperatures occurred in the Salt Lake Valley, Utah, southern Utah, and western Nevada, where they were above 50°; the lowest means in northeastern Nevada and central California, where they were below 50°.

The month began warm in all localities and continued so until the 7th when colder weather set in, but which persisted only a few days. Some stations in Utah, Nevada, and Oregon reported the lowest temperatures for the month during this cold spell. There were also some very low temperatures reported in Wyoming and Idaho.

The last two decades of the month were quite warm, with the exception of the last few days in the month when temperatures dropped everywhere, and the lowest for the month were generally reported.

Maximum temperatures of over 70° occurred at most stations, and about one-half the stations reported maximum temperatures of over 80°. The highest recorded was 93° at Bagdad, Cal., on the 17th, and the next highest was 91° at Garrison, Utah, on the 5th. The lowest maximum for the district was 50°, which occurred at Truckee, Cal., on the 16th.

Minimum temperatures below 32° occurred at all stations except Bagdad, Cal., where 48° was the lowest for the month. About one-half of the stations reported minimum temperatures of 20° or lower, while the lowest for the district was 6° at Seipio, Utah, on the 31st.

The greatest daily range in temperature was 69° at Carlin, Nev., and the greatest monthly range was 77° at the same place.

Killing frost occurred at practically every point in the district.

PRECIPITATION.

For the district, as a whole, the precipitation averaged 0.55 inch, which was 0.35 inch below the normal. Moisture was deficient at all stations except in north-central and western Nevada and locally in Oregon. This month was one of the driest on record, and in Utah four stations reported no precipitation and four only a trace, while in Nevada three stations reported no precipitation.

The greatest monthly amount was 2.17 inches at Silver Lake, Utah, and the greatest amount in twenty-four hours was 0.90 inch at Corinne and Silver Lake, Utah, and at Quinn River Ranch, Nev.

The precipitation was very unevenly distributed, varying from none to 2.17 inches on the western slope of the Wasatch Mountains in Utah. In Nevada the greatest amounts fell in the north-central portion, although there were local exceptions.

In most States precipitation occurred from the 1st to the 6th, but rain also fell at many stations in Nevada, Utah, and Wyoming on the 7th. Light showers again fell in Oregon and California from the 18th to the 21st. It was then fair until the 28th when precipitation occurred in all States except Utah and Wyoming, but occurred in these States on the succeeding day and continued until the end of the month. It was during these last few days that the heaviest precipitation of the month generally occurred. This rain was especially beneficial in Oregon.

Snow fell at most stations in the district during the month. The heaviest was 17 inches at Silver Lake, Utah, but at all other stations the amounts reported were 5 inches or less.

Thunderstorms were reported from numerous points in Utah from the 3d to the 5th, and hail occurred at a number of points near the beginning and again near the end of the month.

HELPFUL SUGGESTIONS FOR THE WEATHER BUREAU TO AID THE AGRICULTURIST.

By Prof. M. E. JONES, Salt Lake City, Utah.

The agriculturist desires data that will enable him to raise the best crops, at the least expense, and in the West this means a better knowledge of evaporation, the duty of water, the sun temperature, and humidity.

The botanist and student of plant life want to get at all the facts that bear on the various changes in plant life due to environment, at least so far as climate is concerned.

The Bureau furnishes us with invaluable data on rainfall, wind movement, and temperature, and some information on humidity; all under certain restricted conditions that are well enough for the purposes of the Bureau, but not enough for our purposes.

The greatest need to-day is for humidity records. There are only two such records taken in the entire State of Utah, and I believe the same number in Nevada, which, so far as the Great Basin is concerned, is all we have. These records are taken at a distance so far above the ground as to amount to little for our purpose.

Our other needs may be placed under two heads, instruments and records.

In the matter of instruments the Bureau is well equipped, but the general public must have handy and inexpensive ones that are accurate. The aneroid barometer fills a long-felt want, and has stimulated interest in meteorological matters more than anything else. The hair hygrometer was hailed as a great step in advance, but the Bureau has discarded it as inaccurate. In fact it refuses to recognize any humidity apparatus except the whirled psychrometer, which is too cumbersome and expensive for general use. The cup hygrometer with wet- and dry-bulbs is quite handy, but we have no data to determine how reliable it is, or how it compares with the standard apparatus. The general public does not know of any suitable and compact thermometer that is accurate and usable under all conditions and sufficiently sensitive. There is no handy anemometer that can be had at a reasonable cost. No farmer wants to invest a hundred dollars, or even fifty dollars, in such an apparatus, but he must, if he wants to study plant life at present.

In the matter of records, as I have said, the crying need is for humidity data obtained at places where the crops grow, and under the identical conditions, not 50 feet above ground as at present, and in some cases from 500 to 100 miles away, and generally outside of their particular life-zone. No one is criticising the value of the present records or the method of getting them, but we want more of the same kind and taken



for special purposes. Temperatures, at present, are taken at a latticed shed in the shade. Plants do not grow there; they grow in the sun. Shade temperatures are largely a question of humidity, the disparity being very great in the arid West. We want to know the temperature at the growing parts of plants, and the actual conditions under which the plants grow, which are the sun temperatures there. We want to know the soil temperatures under all conditions of sun temperature and humidities. We want to know the humidity at the growing parts of the plants, and the effects of variable humidity on their growth and character. We want to know the humidity of the soil best suited for special plants. Now, we drown them out, or starve them by our methods of irrigation, because we do not have the data to get at the condition of the soil scientifically, and much water is wasted and crops are often short in quantity and weight for this reason. We know that a crop needs water badly when it begins to wilt to the eye, but that is long after it should have been irrigated. Now we irrigate so many times a month, and our crops grow much as the Irishman fattened his pigs to get a streak of fat and a streak of lean. This rule of thumb method is crude, but it is the best we have. When we get these data, then we can figure the rate of evaporation in a general way, and by this means the crops can be kept at top notch of growth during the entire season, and thus we can increase our output with the same labor from 25 to 100 per cent, and at the same time save our water so that it can be used elsewhere for more crops.

In the matter of sun temperatures a great deal of experimenting must be done to determine what fairly represents the conditions under which plants grow, for reflection and radiation from the ground is very important and varies with conditions. For example: Last summer during a long series of observations, I put three standard thermometers out at the same time: one in the shade, one in a hygrometer box which was laid on the asphalt pavement, and another by its side uninclosed. The first read 94°, the second 140°, and the third 120°. Thermometers hung against the side of a house will read higher than those close by, hanging freely. It may be said that the conditions are so varied that no definite results can be obtained, but plants are grown under these conditions, and the planter must know what are the effects of these conditions before he can control the growth and nourishment of the plants as it should be done. It may also be said that the present records amount to almost nothing in this regard and can never be of much service. Within our section the conditions of plant growth are very diverse. On the mountains they do not vary greatly from the East, but in the low and hot valleys it is far different, for example: In the Panamint Valley, where I was studying conditions, the gravelly soil became so hot in the sun during April that my feet began to burn while walking over it. The hob nails in my shoes dropped out, and left the leather looking as if it had been scorched, and yet plants grew in that gravel, some shrubs, but mostly some short-lived annuals. Under such conditions, when there is water for irrigation, six crops of alfalfa are raised a year, and other vegetation grows like weeds; but without water all is parched in a few days.

The botanist and student of plant life in general wants still more data, but if he could get even these, it would be a great step in advance.

When the Bureau made its present change into drainage areas from political divisions, it was an important improvement, there is, however, ground for further advance. In such a complex area as the Great Basin there are two very distinct regions which should be kept apart in making up all averages. All that area having an annual temperature of 58°, or higher, is as distinct from the rest as though it belonged to a separate planet. To average the records of these regions with the rest would vitiate both.

*Note.*—It is necessary for the Weather Bureau to have its instruments on the top of buildings as nearly all its stations are situated in the midst of large business centers in order to best subserve the interests there. The exposure of thermometers in a city will give higher mean temperatures than an exposure outside of a city.

A series of observations of sun temperatures would, no doubt, prove very valuable to the botanist, and could be accomplished by using a black bulb in vacuo properly standardized. But whether the work of obtaining the observations as required by the botanist could be carried on as economically by the Weather Bureau officials as by him is doubtful.

The question raised, when to irrigate, is a very important one, and when rightly understood would be the means of saving much money. This could be done by using some form of soil humidity apparatus.

The question of the effect of temperature, intensity of radiation, humidity, and other climatic factors on plant life is so involved with biological considerations that it appears to be more a study for the botanist and horticulturist than for students of the weather and climate.—A. H. T.

#### THE EFFECT OF EXPOSURE AND ALTITUDE ON THE DISTRIBUTION OF FOREST TYPES IN THE MANTI NATIONAL FOREST.

By LINCOLN CROWELL, Forest Assistant.

During the past season the writer has been at work on a timber estimate of the Manti National Forest and has had an excellent opportunity to note the effect of exposure and altitude upon the distribution of forest types.

Topographically speaking, the Manti National Forest is located on a deeply eroded plateau some 75 miles long, north and south, and from 5 to 35 miles wide, east and west. The altitude ranges from 5,000 feet at the base of the foot hills to about 11,000 feet for the tops of flat ridges and divides, although some points rise somewhat higher. The headwaters of the creeks that originate in the forest flow in an east or west direction, thus giving the sides of the canyons through which they flow northerly and southerly exposures.

Change in altitude corresponds to a certain change in latitude and as temperature and precipitation vary with a difference in latitude so do they vary with a difference in altitude. Personal observation leads me to believe that the higher parts of the forest receive a heavier precipitation than do the lower parts. With increase in altitude the daily and seasonal mean temperatures are lower.

The effect of this variation in precipitation and temperature is that tree growth at a lower elevation has a longer growing season but less moisture than does that at a higher elevation.

The different tree species found in the forest are grouped into more or less distinct belts or zones, depending upon their adaptability to withstand the lower temperatures of the higher altitudes, or the drought and high daily temperatures of the lower altitudes.

In the foothills up to 6,000 feet the cedar and pinyon are the principal trees met with; above these occur a belt of oak brush at 6,000 to 7,000 feet, then a broad belt 7,000 to 9,500 feet in which the quaking asp covers a large area, although mixed with it are coniferous trees such as blue spruce, Douglas fir, white fir, and yellow pine. At 9,500 to 10,800 feet occurs the Engelmann spruce zone. It is this zone that supports the heaviest stands of timber and from which the sawmills obtain most of their logs.

These zones are not, however, as distinctly marked as one might be led to suppose, nor are the species characteristic of one zone by any means lacking in the neighboring zone. The boundaries are very irregular and intermingled, and at the same elevation the types characteristic of two distinct zones are often present. This is brought about by difference in exposure. The southern and western exposures get more direct sunlight

than do the eastern and northern exposures. Snow melts there earlier in the spring and growth starts earlier. The daily range of temperature is greater, the soil dries out quicker, and in fact conditions resemble those at lower elevations; so that in the upper or Engelmann zone, while the northerly exposure may have a fine stand of timber, directly facing it, the southerly exposure will be covered with aspen, or be entirely bare of tree growth.

This holds true for the other zones as well, the lower zone always reaching a higher elevation on sites exposed to the sun.

CORRIGENDUM.

On page 372, MONTHLY WEATHER REVIEW for July, 1909, substitute the name of Prof. A. G. McAdie for that of Alfred H. Thiessen as District Editor for that month.



TABLE 1.—*Climatological data for October, 1909. District No. 10, Great Basin.*

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.	Prevailing wind direction.
Wyoming.																				
Border.	Uinta	6,085	7	41.8		75	2	11	31	54	0.25		0.13		3	21	5	5	w.	S. W. Condron.
Evanston	do.	6,860	13	44.2	+ 2.2	71	2	9	31	46	0.13	- 0.99	0.13	1.0	1	23	4	4	w.	Frank Tucker.
Idaho.																				
Geneva	Bear Lake		2								0.14		0.11	0.0	2	24	7	0		F. W. Boehme.
Grace	Bannock	5,400	3	48.0 <sup>b</sup>		76 <sup>b</sup>	2	17 <sup>b</sup>	31	44 <sup>b</sup>	0.62 <sup>b</sup>		0.30 <sup>b</sup>		5 <sup>b</sup>	19	9	3	s.	E. A. Ekern.
Oxford	do.	4,750	2								0.93		0.40	0.5	4	24	5	2		Edwin Smith.
Paris	Bear Lake	5,946	13	46.4	+ 2.2	78	1	12	30	47	0.33	- 0.59	0.22	1.0	3	28	0	3	w.	John Norton.
Stone	Oncida	4,520	2	45.4 <sup>a</sup>		87 <sup>c</sup>	2	14 <sup>a</sup>	30	53 <sup>a</sup>				1.0		24	4	3	s.	Thos. W. Roe.
Weston	do.	4,610	12	49.2	+ 2.5	80	2	13	31	49	0.77	- 0.56	0.28	0.0	4	22	3	6	s.	Wm. T. Chatterton.
Utah.																				
Annabella	Sevier	5,250	4								0.14		0.14	0.0	1					J. W. Fairbanks.
Beaver	Beaver	6,000	6	50.8		75	28	19	31	38	0.20		0.20	0.0	1	21	10	0	sw.	James Connell.
Black Rock	Millard	4,872	9																	A. H. Cassell.
Blacksmiths Fork	Cache	5,500																		U. S. Forest Service.
Card Canyon	do.	5,000																		Do.
Castle Rock	Summit	6,244	6								0.55		0.20	4.0	4	24	5	2	w.	David Moore.
Cedar City	Iron	5,750	4			75	15	19 <sup>a</sup>	31	38	T.		T.	0.0	0	16 <sup>a</sup>	10 <sup>a</sup>	0 <sup>a</sup>	sw.	J. M. Foster.
Corinne	Boxelder	4,240	39	53.2		84	2	21	31	51	0.95		0.90	0.5	2	13	8	10	n.	A. C. Murphy.
Coyote	Garfield		8																	Mrs. E. Clayton.
Deseret	Millard	4,541	15																	S. W. Western.
Enterprise (near)	Washington	4,270	1																	John Day.
Farmington	Davis	4,267	9	50.8		71	14 <sup>t</sup>	27	31	38	1.18		0.53	T.	6	19	11	1	nw.	Charles Boylin.
Fillmore	Millard	5,100	19	55.7	+ 3.2	86	27	23	31	55	0.51	- 0.46	0.43	0.0	3					J. J. Starley.
Frisco	Beaver	7,318	15	52.1	+ 2.7	79	15	21	31	35	0.00	- 0.72	0.00	0.0	0					E. R. Smyth.
Garland	Boxelder	4,350		52.2 <sup>a</sup>		76 <sup>a</sup>	2	27 <sup>a</sup>	9	41 <sup>a</sup>	0.44 <sup>a</sup>		0.43 <sup>a</sup>	0.0	3	15 <sup>a</sup>		2 <sup>a</sup>	s.	Harry B. Shaw.
Garrison	Millard		6	52.4 <sup>a</sup>		91 <sup>a</sup>	5	20 <sup>a</sup>	31	62 <sup>a</sup>	T.		T.	0.0	0	24 <sup>a</sup>	4 <sup>a</sup>	2 <sup>a</sup>	s.	E. M. Smith.
Golden Reef	Beaver	7,000									0.00		0.00	0.0	0					D. W. Woodward.
Government Creek	Tooele	5,277	9	49.2		73	15	19	8 <sup>t</sup>	38	0.35		0.20	2.0	2	24	4	3	s.	Walter James.
Heber	Wasatch	5,606	16	47.1 <sup>a</sup>	+ 1.9	78 <sup>b</sup>	2	18 <sup>b</sup>	23 <sup>t</sup>	56 <sup>b</sup>	0.20 <sup>b</sup>	- 1.07	0.10	1.5	4	20 <sup>b</sup>	8 <sup>b</sup>	1 <sup>b</sup>	s.	John Crook.
Henefer	Summit	5,301	10	45.6		81	2	7	31	59	0.77		0.35	3.0	5	19	6	6	nw.	Wm. Brewer.
Hoyts Canyon	do.	7,400									0.95		4.0	5						James Woolstenhulme.
Huntsville	Weber	5,100	14								1.08	- 0.61	0.54	2.0	3	18	11	2		Lars Petersen.
Ibapah (near)	Tooele	7,500	4																	E. S. Gamwell.
Kanosh	Millard	5,250	1								0.62		0.57	0.0	2					Geo. Crane.
Kelton	Boxelder	4,230	31	49.0		73	15	21	8	39	0.15	- 0.34	0.15	0.0	1	15	10	6	sw.	F. W. Klock.
Levan	Juab	5,010	19	49.7	+ 2.4	76	2	17	31	42	0.52	- 0.67	0.30	0.9	5	21	6		sw.	Wm. Brown.
Logan	Cache	4,507	18	51.0	+ 3.3	73	2	21	31	29	1.53	- 0.27	0.54	0.0	4	13 <sup>b</sup>	3 <sup>b</sup>	7 <sup>b</sup>	n. b.	State Agricultural College.
Lucin	Boxelder	4,504	5	45.6		78	5 <sup>t</sup>	7	31	54	0.21		0.21	T.	1	5	26	0		C. J. Burke.
Lund	Iron	5,086	1																	M. E. Smith.
Manti	Sanpete	5,575	15	43.9	- 4.4	65	1	16	31	35	0.68	- 0.16	0.20	0.0	5	20	0	11		J. M. Anderson.
Marion	Summit	6,750	5																	James Woolstenhulme.
Marysville	Piute	6,180	10	49.4		80	15	10	31	58	0.26		0.24	T.	3	15	8	8	s.	John W. Henry.
Meadowville	Rich	6,200	10	45.7		72	2	20	8 <sup>t</sup>	42	0.62		0.60	1.0	2	27	2	2	w.	J. S. Moffat.
Millford	Beaver	4,962	5	47.2		76	2	22	22	48	0.00		0.00	0.0	0	18	0	13		C. M. Temple.
Millville	Cache	4,848	14								0.89	- 0.69	0.38	0.0	5					Fred Yeates.
Minersville	Beaver	5,070	12								0.02		0.02	0.0	1					Geo. Roberts.
Modena	Iron	5,479	9	49.0	- 1.1	74	24	16	31	47	0.10		0.10	0.0	2	15	12	4	w.	U. S. Weather Bureau.
Morgan	Morgan	5,080	6	46.8		77	2	8	31	50	1.65		0.70	3.0	4	15	12	4	nw.	W. Visick.
Moron	Sanpete	5,519	1								0.19		0.15	0.2	3	2	28	1	sw.	B. F. Eliason.
Mount Nebo	Utah	4,650	8	51.6		79	2	20	31	35	0.32		0.16	0.0	3	22	7	2	n.	D. C. Walkey.
Mount Pleasant	Sanpete	5,859	17	49.3 <sup>b</sup>	- 0.3	78 <sup>b</sup>	15	14 <sup>b</sup>	30	47 <sup>b</sup>	0.58 <sup>a</sup>	- 0.25	0.33 <sup>a</sup>	T.	4	23 <sup>a</sup>	14	3 <sup>a</sup>	sw.	Jane Martin.
Nephi	Juab	6,059	6								0.37		0.19	T.	5	23	5	3	sw.	A. Madsen.
Nephi (near)	do.	6,059									0.31		0.21	T.	2	15	13	3	n.	S. R. Boswell.
Oak City	Millard	4,900	5																	Jos. Finlanson.
Ogden (1)	Weber	4,310	8	51.8	+ 1.3	72	2	26	31	29	0.90	- 0.41	0.41	T.	4	24	5	2	nw.	Enoch Farr.
Ogden (2)	do.	4,310	39																	W. H. Chevers.
Panguitch	Garfield	6,560	1																	F. C. Syrett.
Panguitch Lake	do.	9,000									T.		T.	0.0	0	9	19	3	n.	James E. Prince.
Park City	Summit	7,800	12	49.2	+ 3.9	80	1	22	30	48	1.30	- 0.76	0.60	5.0	3	12	17	2		Irvin Evans.
Parowan	Iron	5,970	18	51.4	+ 2.6	85	23	17	30	45	0.00	- 0.89	0.00	0.0	0	28	0	3		Scott Matheson.
Payson	Utah	4,637	6								0.82		0.59	0.0	4	17	5	9	sw.	D. L. Coombs.
Pinto	Washington	5,907	12	48.8 <sup>b</sup>	+ 4.1	74 <sup>b</sup>	13 <sup>t</sup>	12 <sup>b</sup>	31	52 <sup>b</sup>	0.00	- 1.46	0.00	0.0	0	16 <sup>t</sup>	8 <sup>t</sup>	0 <sup>t</sup>	n. t.	John H. Harrison.
Promontory	Boxelder	4,913	38								0.32	- 0.25	0.30	3.0	2					F. C. Houghton.
Provo	Utah	4,532	17	50.6	+ 1.4	83	2	20	31	54	0.57	- 0.39	0.28	0.0	4	18	13	0		James A. Oliver.
Randolph	Rich	6,442	6								T.		T.	0.0	28	3	0	sw.	Wm. Rex.	
Richfield	Sevier	5,350	19	50.6	+ 2.7	79	14 <sup>t</sup>	15	31	53	0.60		0.60	0.0	1	26	0	5	sw.	Joseph J. Jensen.
Richins Summit	Summit	6,500									0.85		0.40	5.0	5					Ernest H. Brewer.
Saltair	Salt Lake	4,220	6	52.8		70	2 <sup>t</sup>	29	31	25	0.59	- 0.45	0.30	T.	5					E. J. Bench.
Salt Lake City	do.	4,366	35	54.4	+ 2.2	78	2	28	31	30	1.13	- 0.27	0.50	T.	7	16	12	3	sw.	U. S. Weather Bureau.
Scipio	Millard	5,260	14	47.9	+ 0.4	78	2	6	31	64	0.28	- 1.04	0.14	T.	3	20	6	5	sw.	Thos. Memmott.
Silver Lake	Salt Lake		1	46.8		70	16	9	31	36	2.17		0.90	17.0	6	17	8	6	sw.	N. S. Fetherolf.
Soldier Summit	Utah	7,474	17								0.92		0.67	0.0	4	27	1	3		Agent, D. & R. G. Ry.
Spanish Fork Canyon	do.			54.1 <sup>a</sup>		80 <sup>a</sup>	2	24 <sup>a</sup>	31	36 <sup>a</sup>	0.92									U. S. Reclamation Service.
Thistle	do.	5,075	17																	Agent, D. & R. G. Ry.
Tooele	Tooele	4,900	13	52.0	+ 1.5	76	2 <sup>t</sup>	26	31	41	0.44	- 0.91	0.17	2.0	6	16	10	5	ne.	E. A. Bonelli.
Utah Lake Pump'g Sta.	do.	4,500	4	50.2 <sup>b</sup>		74 <sup>t</sup>	13	21	31	41 <sup>t</sup>	0.47		0.10	0.1	5	21	8	2		W. A. Knight.
West Canyon	Tooele	7,800									0.53		0.30	3.0	2					Walter James.
Oregon.																				
Ana River	Lake																			Curtis Duvall.
Burns	Harney	4,157	19	44.8	- 1.1	71	23	19	8 <sup>t</sup>	41	1.01	+ 0.47	0.68	3.0	4	20	3	8		J. C. Welcome, jr.
Burns Mill	do.																			John P. Sayer.
Cecils Ranch	do.																			H. D. Cecil.
Christmas Lake	Lake		1																	John C. Green.
Paisley	do.	4,500	5	50.7 <sup>t</sup>		74 <sup>b</sup>	11	31 <sup>t</sup>	30	35 <sup>t</sup>	0.98		0.42		8	21	2	8	sw.	E. C. Woodward.
"P" Ranch	Harney																			A. M. Byrd.
Silver Lake	Lake	4,700	14	51.0	- 6.2	80	11	19	23	55	0.65	- 0.33	0.20	9.0	6	15	4	12	s.	E. K. Henderson.
California.																				
Truckee	Nevada	5,819	38	32.6	-12.5	50	16	20	19	20	0.25	- 0.78	0.10	2.0		20	5	6	s.	Agent, So. Pac. Co.
Nevada.																				
Austin	Lander	6,594	21																	J. F. Wiseman.
Battle Mountain	do.	4,843	39																	

TABLE 1.—Climatological data for October, 1909. District No. 10—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snow/fall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.			Number of cloudy days.	
Nevada—Cont'd.																					
Columbia.....	Esmeraldo.....	5,750	3	52.3		78	26	26	30†	43	0.77		0.39	0.0	3	16	10	5	se.	A. Booth.	
Dutton.....	Elko.....	5,100	2	47.6		80*	16	15	27	61				2.0		23	3	5		Golconda Cattle Co.	
Elko.....	do.....	5,342	39	47.1	+ 3.5	82	17	10	25	62	1.02	+ 0.55	0.85	T.	2	13	11	7	e.	Agent, So. Pac. Co.	
Ely.....	White Pine.....	6,421	19	49.0	+ 5.6	75	27	24	8†	48	0.20	- 0.58	0.20	T.	1	30	1	0	nw.	G. C. Hunting.	
Eureka.....	Eureka.....	6,500	7	48.8		75	14†	22	29†	41	1.29		0.40	1.0	6	19	3	9	s.	Clay Simms.	
Fallon.....	Churchill.....	3,965	5	51.6		80	13	24	30	48	0.70		0.47	0.0	5	25	3	3	w.	U. S. Reclamation Service	
Fernley.....	Lyon.....	4,200	2	53.0		81	16	30	8†	47	1.16		0.62	0.0	3	17	7	7	w.	Do	
Gardnerville.....	Douglas.....	4,830	10	49.6		77	13	19	24	53	0.07		0.05	0.5	3	10	11	10	s.	William Dangberg.	
Geyser.....	Lincoln.....		5																	Mrs. J. F. Wambolt.	
Golconda.....	Humboldt.....	4,697	31	52.6	+ 2.0	80	12	25	7	45	1.10	+ 0.74	0.85	0.0	3	12	14	5	nw.	Agent, So. Pac. Co.	
Halleck.....	Elko.....	5,631	17								0.10	- 0.37	0.10	0.0	1	9	12	10	nw.	Do.	
Hamilton.....	White Pine.....	7,977	3																	George Allen.	
Humboldt.....	Humboldt.....	4,236	39																	Agent, So. Pac. Co.	
Jean.....	Clark.....	2,074	2	60.4*		87*	25	32*	31	48*	0.00*		0.00*	0.0	0*	27	2	2	sw.	Agent, Salt Lake Route.	
Leetville.....	Churchill.....	4,020	3	53.4*		80*	13	26*	30	48*	0.60*		0.53*	0.0	2*	21	6	4	w.	U. S. Reclamation Service	
Lewers Ranch.....	Washoe.....	5,500	22	51.2	0.0	79	25	29	29†	45	1.99	+ 0.42	0.67	1.0	5	10	15	6		Ross Lewers.	
Lovelock.....	Humboldt.....	3,977	17	53.6	+ 1.6	89	2†	24	29	55	0.11	- 0.12	0.04	0.0	5					John S. Case.	
McAfee Ranch.....	Esmeraldo.....	4,835	6	50.7*		87†	6	16*	25	60†	0.00		0.00	0.0	0	18	1	12	n.	G. A. McAfee.	
Millett.....	Nye.....		2	47.8		77	14	15	25†	59	0.40		0.28	0.0	3	21	3	7	s.	Fred J. Jones.	
Mina.....	Esmeraldo.....	4,600	3	52.6		80	12†	24	29	53	1.22		0.75	0.0	3	15	9	7	sw.	Agent, So. Pac. Co.	
Palmetto.....	do.....	6,780	20																	Isaac McConnell.	
Potts.....	Nye.....	6,990	17	43.6	- 1.0	68	25	15	31	47	0.30		0.00	0.15	0.0	3	9	8	14	n.	Miss Mamie Potts.
Quinn River Ranch.....	Humboldt.....	4,850	8	49.0		82	15	18	25	55	1.39		0.90	0.0	6	15	7	9	sw.	F. M. Payne.	
Reno.....	Washoe.....	4,532	39	51.6	+ 1.9	79	14	28	29	45	0.46	+ 0.05	0.24	T.	5	19	9	3	w.	U. S. Weather Bureau.	
Soda Lake.....	Churchill.....	4,834	3																	U. S. Reclamation Service	
Tecoma.....	Elko.....	4,812	32	47.4	+ 1.6	80	14†	17	22†	57	0.03	- 0.38	0.03	0.0	1					Agent, So. Pac. Co.	
Tonopah.....	Nye.....	6,090	3	53.1		73	14	26	30	29	0.26		0.20	0.0	3	20	9	2	se.	U. S. Weather Bureau.	
Wabuska.....	Lyon.....	4,347	7	49.4		76	13†	17	29	53	0.80		0.50	0.0	2	17	18	5	ne.	J. G. Young.	
Wells.....	Elko.....	5,631	38	46.2	+ 0.4	76	24	16	26	53	0.10	- 0.53	0.03	0.0	4	16	3	12		Agent, So. Pac. Co.	
Winnemucca.....	Humboldt.....	4,432	31	50.0	+ 1.4	78	15	24	26	52	1.28	+ 0.76	0.63	0.2	8	16	7	8	ne.	U. S. Weather Bureau.	

- \* Precipitation included in that of the next measurement.  
 \* Temperature extremes are from observed readings of the dry-bulb; means are computed from observed readings.  
 † Also on other dates.  
 ‡ Separate dates of fall not recorded.  
 § Data are from standard instruments not supplied by the U. S. Weather Bureau.  
 ¶ Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.  
 || Estimated by observer.  
 || Precipitation for the 24 hours ending on the morning when it is measured.  
 T. Precipitation is less than 0.01 inch rain or melted snow.  
 \*, b, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.



[illegible]





TABLE 3.—Maximum and minimum temperatures at selected stations, October, 1909. District No. 10, Great Basin.

Date.	Wyoming.				Idaho.		Utah.																Oregon.		Nev.	
	Border.		Evanston.				Corinne.		Deseret.		Government Creek.		Marysville.		Modena.		Ogden (I.).		Parowan.		Provo.					
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	66	25	66	27	65	32	80	44	.....	.....	67	32	77	35	68	39	65	42	78	41	70	39	70	46	49	44
2...	75	36	71	36	80	39	84	40	.....	.....	72	45	76	48	64	39	72	50	71	42	83	40	78	53	48	
3...	71	34	65	35	75	39	76	37	.....	.....	63	36	74	40	58	38	69	46	70	43	78	39	71	48	52	
4...	63	26	62	40	69	38	74	35	.....	.....	64	44	70	29	60	31	69	45	68	40	73	39	67	46	49	
5...	62	29	60	40	69	35	72	31	.....	.....	65	33	68	25	62	30	61	41	69	35	67	33	62	43	54	
6...	62	21	60	29	68	32	80	36	.....	.....	64	31	67	30	64	32	62	44	70	33	70	35	64	46	56	
7...	53	25	50	35	54	37	60	42	.....	.....	52	37	56	39	61	40	53	43	71	30	56	36	52	41	62	
8...	47	12	47	14	56	23	67	35	.....	.....	50	19	54	29	55	28	50	29	67	29	55	24	50	34	60	
9...	57	18	57	21	61	25	63	36	.....	.....	55	25	61	25	64	26	56	34	66	28	62	25	57	36	54	
10...	63	23	65	26	71	30	69	40	.....	.....	65	32	69	27	70	31	62	39	67	26	70	26	65	40	58	
11...	63	23	66	28	70	31	75	28	.....	.....	69	34	74	25	72	33	65	41	69	27	75	29	68	45	70	
12...	67	22	67	30	74	32	72	31	.....	.....	71	39	75	32	73	41	67	45	65	29	77	33	70	46	71	
13...	65	22	56	35	75	54	76	27	.....	.....	72	40	76	29	74	38	69	45	69	30	77	31	73	48	67	
14...	67	27	68	36	78	54	69	30	.....	.....	72	39	75	30	74	37	70	45	78	31	78	31	73	50	69	
15...	68	21	69	29	77	31	79	37	.....	.....	73	38	80	28	74	34	69	40	76	32	80	29	74	45	68	
16...	64	23	70	30	74	32	74	36	.....	.....	71	37	77	30	69	33	69	47	75	31	81	33	71	49	70	
17...	67	20	65	24	68	30	72	38	.....	.....	65	33	72	28	68	36	64	42	73	32	71	33	65	46	65	
18...	68	18	67	25	71	27	78	32	.....	.....	70	33	76	22	68	32	66	41	72	33	79	28	72	42	54	
19...	65	26	62	29	71	35	70	36	.....	.....	70	42	76	34	67	34	69	41	73	35	73	33	70	50	48	
20...	51	32	54	30	60	38	72	37	.....	.....	62	29	66	33	66	34	67	39	74	34	66	33	61	44	54	
21...	60	19	58	28	66	26	69	34	.....	.....	67	37	70	29	63	33	62	41	87	50	68	29	64	45	58	
22...	60	16	60	18	63	22	63	40	.....	.....	64	27	69	22	67	30	59	35	65	35	68	26	62	40	64	
23...	67	13	68	20	69	21	70	37	.....	.....	67	29	72	21	68	25	64	36	85	53	71	23	68	39	71	
24...	60	19	62	35	67	31	79	33	.....	.....	66	37	75	21	74	29	63	38	75	40	70	27	64	44	68	
25...	60	19	58	20	65	24	74	30	.....	.....	67	32	75	21	72	26	64	40	74	30	72	23	67	38	70	
26...	61	15	61	28	71	29	73	27	.....	.....	68	33	73	19	73	26	65	39	70	30	74	24	68	44	68	
27...	65	14	63	24	72	23	77	28	.....	.....	71	36	76	18	72	26	69	42	70	25	78	24	72	42	64	
28...	69	15	64	24	71	34	74	36	.....	.....	64	44	72	33	66	32	71	44	65	23	75	24	72	55	46	
29...	65	13	54	36	65	32	70	37	.....	.....	62	36	67	43	58	32	64	38	59	20	65	33	63	38	47	
30...	53	14	45	22	35	26	68	27	.....	.....	37	26	51	31	47	28	44	31	55	17	78	28	46	32	48	
31...	45	11	40	9	40	13	62	21	.....	.....	49	19	56	10	56	16	43	26	57	23	51	20	50	28	46	
Mns	62.2	21.3	60.6	27.8	66.8	31.5	72.3	34.2	.....	.....	64.3	34.0	70.2	28.6	66.0	31.9	63.3	40.3	70.1	32.8	71.3	30.0	65.5	43.3	59.0	30.7

Date.	Nevada.																							
	Ely.		Eureka.		Fallon.		Jean.		Lovelock.		Millet.		Mina.		Quinn River Ranch.		Reno.		Tecoma.		Tonopah.		Winnemucca.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	68	43	66	40	61	44	48	80	41	67	41	64	42	58	40	47	68	36	61	48	63	42		
2...	66	36	61	39	60	46	46	75	50	89	34	59	42	61	35	55	43	58	43	62	28	44		
3...	56	40	50	31	56	44	65	42	88	39	53	35	59	35	68	33	48	39	62	26	47	37		
4...	57	28	41	30	56	44	72	43	85	35	53	33	61	39	60	40	57	39	66	22	49	35		
5...	56	30	52	35	62	34	70	43	80	37	60	36	62	34	66	30	62	37	62	22	51	37		
6...	60	30	50	30	60	39	75	42	65	35	56	30	64	38	56	44	63	42	53	22	53	38		
7...	57	35	53	34	60	34	76	45	70	30	64	35	65	33	55	36	62	39	62	26	56	40		
8...	53	24	57	23	61	31	78	46	80	32	59	26	76	35	60	22	63	33	66	28	56	34		
9...	62	28	64	28	67	31	76	42	74	35	67	27	78	34	71	27	68	33	68	28	63	39		
10...	70	31	72	34	72	33	78	43	76	31	70	29	78	40	77	29	73	35	66	26	69	45		
11...	71	36	73	38	72	39	84	44	79	37	70	32	75	48	78	38	70	39	78	26	72	57		
12...	69	35	72	41	79	50	85	42	80	35	72	42	80	35	79	31	76	45	76	36	67	55		
13...	66	38	72	38	80	38	80	45	89	37	76	30	79	36	78	29	79	38	78	38	71	53		
14...	63	34	75	39	79	37	85	42	86	37	77	29	80	38	81	33	79	40	80	36	73	55		
15...	66	40	75	39	78	37	85	42	82	38	75	30	78	36	82	31	77	39	78	32	70	55		
16...	70	42	74	38	78	37	85	45	87	35	73	30	80	38	75	29	75	41	80	30	69	50		
17...	67	34	70	35	75	40	80	47	82	34	73	29	78	44	76	26	74	36	80	26	67	52		
18...	71	32	69	43	76	40	82	45	78	33	70	30	73	38	72	29	70	38	78	28	67	51		
19...	64	40	64	35	68	37	77	50	66	32	71	36	72	27	66	42	57	45	76	26	64	45		
20...	65	30	62	28	69	29	.....	.....	60	33	69	27	70	33	64	35	66	38	78	21	63	42		
21...	65	37	66	37	67	31	77	41	63	32	67	40	74	26	63	32	61	38	76	26	63	44		
22...	66	24	67	28	67	28	78	46	74	30	66	20	76	37	69	22	70	31	72	17	65	45		
23...	74	26	71	37	74	27	86	38	79	30	76	17	77	26	72	21	75	32	70	17	70	51		
24...	70	28	71	35	72	30	85	37	82	32	73	17	79	26	73	20	76	31	68	19	70	52		
25...	65	27	72	32	74	29	87	39	74	28														

Climatological Data for October, 1909.  
DISTRICT No. 11, CALIFORNIA.

Prof. ALEXANDER G. McADIE, District Editor.

GENERAL CLIMATOLOGICAL CONDITIONS.

October, 1909, was much warmer than the same month last year, yet it was, notwithstanding, somewhat cooler than the normal October in California. The precipitation was slightly below the normal. There were no noteworthy features, the month as a whole being one of quiet fall weather. There was a warm spell throughout the southern counties about the 24th, when afternoon temperatures reached 100°, or even higher, at many points. In the north the warmest weather occurred on the 9th and 10th. High temperatures are not infrequent during October in California, but this year they were neither as prolonged nor as extreme as in ordinary years. The winds were generally from the west and northwest and no very high velocities were reported. There was very little snow in the mountains during the month. Weather conditions were excellent for curing and drying purposes, and in nearly every case periods of unsettled weather and rain were forecast sufficiently long enough in advance to permit raisin makers, prune driers,

and others to cover and protect. In this respect the work of the Forecast Division during the month was excellent.

TEMPERATURE.

The monthly mean temperature for the State was 60.2°, which is 0.3° below the normal. The highest monthly mean was 74.8° at Indio. The lowest monthly mean was 40.0° at Tamarack. The highest temperature was 104° on the 24th at Escondido and Ojai Valley. The lowest temperature was 11° on the 29th at Tamarack. The greatest daily range was 68° at San Jacinto on the 22d.

PRECIPITATION.

The average precipitation for the State was 1.66 inches, or 0.24 inch below the normal. The greatest monthly amount was 15.70 inches at Monumental, and the least zero at 20 stations. The greatest 24-hour rainfall was 2.86 inches at Magalia on the 18th. The greatest amount of snowfall at any one place was 31 inches at Tamarack. The next greatest was 14 inches at Fordyce Dam.



TABLE 1.—Climatological data for October, 1909. District No. 11, California.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.	Prevailing wind direction.
Oregon.																				
Klamath Agency	Klamath	1	1																H. G. Wilson.	
Klamath Falls	do.	4,250	18	48.9	- 0.4	81	9	25	24	47	1.29	+ 0.25	0.42		11	8	11	12	nw.	W. H. Heilman.
Lakeview	Lake	4,825	24																Walter Dutton.	
Long Valley	do.																		Cyrus L. Becraft.	
Merrill	Klamath	4,070	4	48.8		80	15	19	24	52	0.20		0.10		2				Mrs. E. L. Gifford.	
Yonka	do.	4,146	1	46.8		90	10	14	25	64	1.00		0.26	0.2	9	14	16	1	s.	Agent, So. Pac. Co.
California.																				
Alturas	Modoc	4,460	5	49.2		84	14	19	25	60	1.40		0.50	5.0	10	15	10	6	sw.	Prof. C. B. Towle.
Angiola	Tulare	208	9								0.20		0.15	0.0	2	28	0	3	nw.	Agent, Santa Fe R.R.
Antioch	Contra Costa	46	30	63.3	- 0.1	85	12	54	19		0.07	- 0.73	0.04	0.0	3	23	0	8	nw.	Agent, So. Pac. Co.
Aptos	Santa Cruz	102	24	58.6	+ 0.8	84	9	38	29		1.32	- 0.25	0.42	0.0	6	16	6	9	nw.	Do.
Auburn	Placer	1,360	38	66.0	+ 1.4	87	15	38	30	45	2.55	+ 0.68	1.10	0.0	8	17	0	14	s.	Do.
Azusa	Los Angeles	540	7	63.2		101	24	35	27	49	0.32	- 0.49	0.32	0.0	1	26	1	4	sw.	A. F. Griffith.
Bagdad	San Bernardino	784	6	74.8	+ 2.2	93	17	48	31	35	0.00	- 0.37	0.00	0.0	0					Agent, Santa Fe R.R.
Bakersfield	Kern	404	20	65.6	- 0.4	90	10	40	29	36	0.00	- 0.47	0.00	0.0	0	31	0	0		Do.
Barstow	San Bernardino	2,105	6	62.5		83	14	30	31	42	0.10	- 0.42	0.10	0.0	1	31	0	0	w.	E. L. White.
Beckwith	Plumas	5,005	1	48.6		83	14	21	30	53	2.14		0.79	3.2	8	15	4	12	sw.	F. F. Peck.
Berkeley	Alameda	317	22	58.6	- 0.3	81	9	45	29	24	1.34	- 0.43	0.50	0.0	7	13	8	10	sw.	State University.
Biggs	Butte	98	10	63.7	+ 1.3	85	13	45	24		1.52	0.00	0.57	0.0	5	18	4	9	s.	Agent, So. Pac. Co.
Bishop	Inyo	4,450	14																W. A. Chalfont.	
Blocksburg	Humboldt	1,700	3	57.0		88	8	35	29	39	5.98		1.47	0.0	10	11	8	12	nw.	Victor Hoppa.
Blue Canon	Placer	4,695	10	51.9	+ 0.6	78	12	23	30	32	4.60	- 0.45	1.00	4.0	8	21	1	9	s.	Agent, So. Pac. Co.
Blythe	Riverside			67.2		97	14	32	31	58	0.00		0.00	0.0	0	30	0	1	sw.	H. V. Blenkiron.
Branscomb	Mendocino	2,000	9	56.1		86	10	32	29	38	7.44		1.82	0.0	10	15	7	9	w.	A. J. Haun.
Brawley	Imperial	- 105	5	71.6		98	11	46	28	46	0.00		0.00	0.0	0	27	4	0	nw.	U. S. Weather Bureau.
Brush Creek	Butte	2,140	5	54.7		84	13	36	23	38	4.51		1.51	0.0	11	16	7	8	s.	Cal. Gas & Electric Co.
Calexico	Imperial	0	4	72.8		95	11	49	28	42	0.00		0.00	0.0	0	28	3	0	w.	J. E. Peck.
Caliente	Kern	1,290	33	64.3	- 0.5	93	11	44	31		0.41	- 0.06	0.41	0.0	1	23	0	8	w.	Agent, So. Pac. Co.
Calistoga	Napa	363	37	55.9	- 4.1	90	8	30	29		1.93	- 0.35	1.08	0.0	7	19	0	11	w.	Do.
Campbell	Santa Clara	217	12	57.6	- 0.9	88	10	35	30	43	T.	- 0.85	T.	0.0	0	15	7	9	nw.	F. M. Righter.
Camptonville (near)	Yuba	3,500	2	59.4		90	12	34	30	38	5.56		2.55	T.	9	17	2	12		S. B. Johnson.
Cedarville	Modoc	4,675	15	49.6	+ 0.7	82	24	24	30	54	0.94	- 0.66	0.53	2.0	7	14	17	0	sw.	T. H. Johnstone.
Chico	Butte	189	39	63.6	- 0.8	90	12	38	24	49	1.34	- 0.07	0.35	0.0	7	18	6	7	s.	Agent, Butte R. R. Co.
Chino	San Bernardino	714	17	66.9	+ 3.1	92	10	43	28		0.25	- 0.79	0.25	0.0	1	25	1	5	sw.	Agent, So. Pac. Co.
Cisco	Placer	5,939	38	53.4	+ 6.7	69	12	27	29		2.10	- 0.16	0.90	9.0	4	23	0	8	s.	Do.
Claremont	Los Angeles	1,200	17	65.6	+ 3.2	101	24	41	31	48	0.29	- 0.93	0.26	0.0	3	19	9	3		F. P. Brackett.
Cloverdale	Sonoma	340	7	60.0		93	10	37	29	43	2.10		0.57	0.0	8	24	4	3	n.	Lloyd Browne.
Colfax	Placer	2,421	38	53.2	- 6.3	70	10	35	30	20	3.22	+ 0.85	0.70	0.0	9	25	0	6	s.	Agent, So. Pac. Co.
Colusa	Colusa	60	6	61.6		86	12	40	30	39	0.61	- 0.40	0.34	0.0	4				n.	W. K. De Jarnatt.
Corning	Tehama	277	23	66.2	+ 1.4	86	11	56	10		0.63	- 0.84	0.25	0.0	4	18	0	13	s.	Agent, So. Pac. Co.
Cuyamaca (1)	San Diego	4,677	10	56.4	+ 6.8	80	24	35	29	36	0.06	- 1.69	0.06	0.0	1	19	10	2	e.	L. L. Macquarie.
Daunt	Tulare	4,000	2	59.0		86	10	30	31	49	1.43		0.85	0.0	3	18	9	4		D. L. Wishon.
Davisville	Yolo	51	37	60.0	- 4.9	90	12	30	29	48	0.81	- 0.06	0.52	0.0	7	19	9	3	sw.	S. H. Beckett.
Deer Creek	Nevada	3,700	2	53.2		87	13	31	29	47	6.13		2.30	3.0	8	14	6	11		Cal. Gas & Electric Co.
Delta	Shasta	1,138	24	62.4	+ 3.1	92	12	37	29	50	3.45	- 1.87	1.00	0.0	9	17	0	9	n.	Agent, So. Pac. Co.
Denair	Stanislaus	126	9	61.4		92	10	33	27	46				0.0						Agent, Santa Fe R.R.
Dobbins	Yuba	1,650	5	63.8		88	9	42	30	36	2.77		0.86	0.0	9	12	14	5		Bishop & Taylor.
Dudleys	Mariposa	3,000									2.08		0.75	0.0	5	20	2	9		W. H. Dudley.
Dunnigan	Yolo	65	32	67.4	- 1.9	79	28	50	30	19	1.10	+ 0.07	0.60	0.0	2	15	7	9	s.	Agent, So. Pac. Co.
Dunsmuir	Siskiyou	2,285	20	53.2	+ 0.8	86	10	35	30		3.55	- 0.91	0.95	0.0	9	21	0	10	n.	Do.
Durham	Butte	160	14	61.3	+ 1.1	89	9	39	26	45	1.42	- 9.24	0.36	0.0	5	15	8	8	s.	R. W. Durham.
El Cajon	San Diego	482	10	64.2	0.0	90	24	39	22	57	0.00	- 0.50	0.00	0.0	0	28	2	1	sw.	H. H. Kessler.
Electra	Amador	725	5	63.3		92	10	39	16	38	1.91		0.68	0.0	6	23	2	6		Cal. Gas & Electric Co.
Elsinore	Riverside	1,234	14	63.4	- 2.2	99	24	32	31	59	0.09	- 0.43	0.09	0.0	0	25	5	1	w.	W. H. Bohannon.
Emigrant Gap	Placer	5,230	35	52.4	+ 1.7	85	14	27	20	42	4.64	+ 1.72	1.22	3.0	9	22	0	9	n.	Agent, So. Pac. Co.
Esccondido	San Diego	657	15	64.4	+ 2.9	104	24	31	30	62	0.00	- 0.47	0.00	0.0	0	8	22	1	w.	A. R. Moon.
Eureka	Humboldt	64	23	53.8	+ 0.7	77	9	39	24	28	3.78	+ 0.88	0.90	0.0	4	22	6	3	nw.	U. S. Weather Bureau.
Farmington	San Joaquin	111	30	64.5	+ 0.8	90	9	38	30		0.78	- 0.11	0.42	0.0	4	22	6	3	nw.	Agent, So. Pac. Co.
Folsom	Sacramento	252	37	63.0	- 1.0	92	12	41	31	42	1.50	+ 0.14	0.56	0.0	5	22	3	6	s.	F. O. Hutton.
Fordyce Dam	Nevada	6,500	14	44.0		67	13	28	24	32	5.68	+ 0.97	1.46	14.0	9	12	11	8	sw.	E. E. Roening.
Fouts Springs	Colusa	1,650	5	57.8		85	13	32	23	46	2.37		0.83	0.0	7					H. S. Green.
Fresno	Fresno	293	22	64.0	- 0.7	91	10	40	31	36	0.72	+ 0.19	0.53	0.0	3	20	8	3	w.	U. S. Weather Bureau.
Fruto	Glenn	624	20	60.2	- 4.0	89	12	36	30		0.80	- 0.60	0.35	0.0	3	25	0	6	s.	Agent, So. Pac. Co.
Galt	Sacramento	49	31	61.4	- 1.6	85	26	39	26		1.17	+ 0.10	0.60	0.0	4	20	3	8	w.	Do.
Georgetown	El Dorado	2,650	36	58.2	- 5.4	84	14	34	30	32	4.06	+ 0.65	1.42	0.0	10	15	6	10	se.	C. M. Fitzgerald.
Gilroy	Santa Clara	193	35	58.9	- 1.4	95	9	40	29		0.54	- 0.58	0.18	0.0	5	18	0	13	se.	Agent, So. Pac. Co.
Gold Run	Placer	3																		

TABLE 1.—Climatological data for October, 1909. District No. 11—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.		
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.	Prevailing wind direction.
California—Cont'd.																				
Los Banos **	Merced	121	22	62.8	- 1.4	85	13†	45	30	0.20	- 0.15	0.20	0.0	1	13	0	18	w.	Agent, So. Pac. Co.	
Los Gatos	Santa Clara	600	22	60.4	- 0.3	88	10	41	29†	0.63	- 1.67	0.27	0.0	4	17	4	10	n.	F. H. McCullagh.	
Macdoel	Siskiyou	4,258	22	47.4		79	10	20	25†	0.81		0.32	0.0	6	20	8	3	nw.	Robert Miller.	
Madeline	Lassen	5,270	20	50.6		88	12	19	25	60	1.10		0.42	3.0	6	20	2	9	sw.	J. H. Williams.
Magalia	Butte	2,321	5	56.4	- 2.6	99	11	50	28	44	0.77	- 0.12	0.86	0.0	8	17	4	10	n.	Agent, Butte Co. R. R.
Mammoth Tank	Imperial	257	31	74.2	+ 4.5	99	11	50	28	44	0.00	- 0.12	0.00	0.0	0	30	1	0	w.	Agent, So. Pac. Co.
Marysville	Yuba	67	38	69.8	+ 4.5	99	11	42	29	42	1.16	+ 0.11	0.75	0.0	5	17	0	14	s.	Do.
Mecca	Riverside	- 185	3	72.3		103	23	43	31	46	0.00		0.00	0.0	0	31	0	0	se.	A. Lunsted.
Mendo Park **	San Mateo	64	31	60.8	+ 1.6	86	10	44	18†	0.57	- 0.44	0.46	0.0	3	16	0	14	nw.	Agent, So. Pac. Co.	
Merced	Merced	173	35	61.2	+ 3.6	87	9†	34	29	44	0.39	- 0.12	0.20	0.0	3	21	1	6	nw.	Agent, Santa Fe R. R.
Mill Creek (1)	Amador	669	2	55.8		81	14	33	30	38	3.36	- 0.47	1.10	0.0	7	16	9	6	w.	Cal. Gas & Electric Co.
Milton (near)	Calaveras	90	37	64.1	- 1.2	80	8	44	31	0.45	- 0.11	0.20	0.0	0	3	29	0	2	nw.	J. H. Southwick.
Modesto **	Stanislaus	2,751	32	56.9	- 0.9	81	12	29	3	44	0.00	- 0.25	0.00	0.0	0	29	0	2	w.	Agent, So. Pac. Co.
Mojave	Kern	1,550	16	62.5	+ 4.2	86	10	38	30	25	1.74	- 0.00	0.62	0.0	5	17	3	9	w.	C. E. Prindle.
Mokelumne Hill	Calaveras	3,210	5	54.6		83	24	28	30†	49	1.18		0.75	0.0	2	26	3	2	w.	H. Lathrop.
Mono Ranch	Ventura	2,450	21	55.6	- 0.9	89	15	23	30	53	1.23	+ 0.60	0.70	0.0	6	11	6	14	n.	G. H. Chambers.
Montague	Siskiyou	44	40	60.0	+ 1.8	80	9†	46	29	0.29	- 0.56	0.19	0.0	2	21	4	6	se.	Agent, So. Pac. Co.	
Monterey **	Monterey	15	44	58.4	+ 3.3	78	10†	36	31	34	0.17	- 0.84	0.15	0.0	2	20	8	3	nw.	John C. Knecht.
Monterey	Kern	4,500	4	53.0		78	10†	32	29	40	15.17		3.75	6.0	10	17	4	10	n.	G. F. Morgan.
Monumental	Del Norte	2,375	10	57.5	- 1.2	78	13	40	29	23	2.37	+ 0.17	1.15	0.0	9	13	8	10	nw.	U. S. Weather Bureau.
Mount Tamalpais	Marin	20	32	58.0	- 0.7	90	9	35	29†	47	1.77	+ 0.36	0.75	0.0	6	14	13	4	s.	Thomas Hull.
Napa (1) †	Napa	60	31	60.4	+ 1.7	90	9†	40	30	38	1.62	+ 0.16	0.52	0.0	8	17	9	5	sw.	W. H. Martin. (S. H.)
Napa (2) †	do.	477	17	68.3	- 3.9	90	10†	40	4†	43	0.00	- 0.11	0.00	0.0	0	31	0	0	s.	Agent, Santa Fe R. R.
Needles	San Bernardino	2,580	17	57.4	+ 3.4	87	12	34	31	52	3.48	+ 0.77	1.00	0.0	10	10	9	12	sw.	S. W. Marsh.
Nevada City	Plevada	970	16	64.4	+ 0.9	82	10	45	30	23	1.72	+ 0.31	0.56	0.0	7	16	4	11	ne.	George D. Kellogg.
Newcastle	Los Angeles	1,200	32	62.2	+ 0.1	97	24	38	17	0.65	- 0.07	0.45	0.0	2	27	0	4	se.	Agent, So. Pac. Co.	
Newhall **	Stanislaus	91	20	63.2	- 1.3	87	11†	39	29	39	0.40	- 0.42	0.38	0.0	2	22	0	9	n.	E. S. Wangenheim.
Newman	Butte	2,500	5	56.4		83	12	34	30	38	3.85	- 1.27	1.27	0.0	10	18	1	12	sw.	Cal. Gas & Electric Co.
Nimshew	Nevada	3,200	12	50.6	- 4.5	76	1	28	4	42	6.06	+ 2.08	1.80	0.0	9	20	0	11	n.	W. G. Shand.
North Bloomfield	Madera	3,000	5	57.5		85	11	30	29†	43	2.15	- 1.20	1.20	0.0	5	14	13	4	sw.	C. H. Shinn.
North Fork	Stanislaus	156	15	62.2	- 0.3	87	9	39	30	0.55	- 0.59	0.38	0.0	4	23	4	4	nw.	Agent, So. Pac. Co.	
Oakdale **	Alameda	36	33	58.8	+ 0.4	81	9	44	29	28	1.42	- 0.27	0.67	0.0	6	11	10	10	w.	Chabot Observatory.
Oakland	Ventura	900	3	63.3		104	24	34	30†	60	0.98	- 0.55	0.55	0.0	4	21	6	4	w.	W. H. Duncan.
Ojai Valley	Glenn	254	27	63.6	- 2.8	93	12	40	29	41	0.71	- 0.41	0.26	0.0	6	20	5	6	n.	W. W. Patch.
Orland	Humboldt	520	6	63.0		92	9†	39	30	47	7.14	- 1.65	0.0	8	22	0	9	n.	Fred T. Hale.	
Orleans	Butte	250	25	63.6	- 3.0	89	9	42	30	37	2.06	+ 0.28	0.61	0.0	5	12	5	14	s.	E. D. Fairchild.
Oroville (near)	do.	213	18	63.1	+ 1.2	92	9†	39	24	46	1.98	- 0.02	0.76	0.0	6	14	9	8	s.	Miss Hettie Boalt.
Palermo	Riverside	584	20	72.4	- 2.1	98	12	48	31	0.00	- 0.15	0.00	0.0	0	31	0	0	w.	Agent, So. Pac. Co.	
Palm Springs **	Los Angeles	827	19	64.2	- 0.6	100	24	39	31	51	0.65	- 0.33	0.62	0.0	2	21	6	4	sw.	E. R. Sorver.
Pasadena	San Luis Obispo	800	22	61.0	+ 1.2	96	11	28	30	63	0.72	- 0.27	0.43	0.0	2	27	2	2	w.	Dr. F. W. Sawyer.
Paso Robles **	Sonoma	190	13	57.6	- 1.0	92	10	34	17†	46	2.54	- 1.31	0.73	0.0	10	17	5	9	s.	E. H. Parnell.
Peachland	Tuolumne	3,750	2	59.7		84	14	34	29†	37	2.40	- 0.98	0.98	0.0	6	13	14	4	se.	Tuolumne W. P. Co.
Penstock Camp	Santa Barbara	1,000	11	64.9	+ 0.4	96	23	49	37	45	0.88	- 0.72	0.75	0.0	3				sw.	Dr. C. M. Richter.
Pine Crest	El Dorado	1,875	20	56.1	+ 0.6	80	9†	36	30	36	2.58	+ 0.04	0.77	0.0	8	20	4	7	sw.	A. Baring-Gould.
Placerville	San Francisco	250	16	58.2	+ 1.9	83	9†	48	26	26	1.21	- 0.12	0.74	0.0	7	15	2	14	sw.	John Hyslop.
Point Lobos	Marin	490	17	56.8	+ 1	5	9	48	26	24	0.90	- 1.20	0.41	0.0	7	11	5	15	nw.	U. S. Weather Bureau.
Point Reyes	Tulare	464	20	63.7	- 0.9	91	10	35	30	41	0.50	- 0.08	0.27	0.0	3	21	8	2	n.	Harry E. Cowie.
Porterville	San Diego	460	25																sw.	Adams Chapin.
Poway	Plumas	3,400	14	49.2	- 0.4	74	12†	25	24†	41	3.78	+ 0.49	1.00	3.2	9	18	3	10	sw.	L. A. Barrett.
Quincy	Tehama	307	32	43.2	- 0.6	91	12	43	30	35	0.82	- 0.54	0.30	0.0	7	17	9	5	nw.	U. S. Weather Bureau.
Red Bluff	Shasta	552	34	63.4	- 1.1	89	12	42	29	30	1.43	- 1.05	0.48	0.0	8	20	2	9	n.	L. F. Bassett.
Redding	San Bernardino	1,352	16	64.4		98	24	41	19†	0.05		0.20	0.0	3	26	1	4	n.	Paul W. Moore.	
Redlands	Fresno	347	9	62.7		90	9†	36	31	42	0.33		0.65	0.0	3	23	3	5	sw.	Agent, Santa Fe R. R.
Redley	San Bernardino	2,250	3	66.8		93	24	44	17	37	0.73	- 0.46	0.03	0.0	3	17	10	4	w.	Edison Electric Co.
Rialto (near)	Riverside	851	27	64.4	+ 0.2	101	24	40	31	53	0.06	- 0.46	0.03	0.0	3	17	10	4	w.	C. W. Barton.
Riverside	Placer	249	38	60.4	- 3.2	88	9†	40	30	43	1.51	+ 0.37	0.32	0.0	10	18	4	9	s.	Agent, So. Pac. Co.
Rocklin	Humboldt	75	6	55.6		88	9†	37	26	46	3.34	- 0.93	0.0	8	16	2	13	w.	Dr. R. Callihan.	
Rohnerville	Sacramento	71	32	61.6	- 0.6	87	12	42	30	32	1.27	+ 0.37	0.79	0.0	5	15	13	3	s.	U. S. Weather Bureau.
Sacramento (1)	do.	35	56	59.8	- 2.9	80	9†	40	30	34	1.56	+ 0.72	0.81	0.0	6	19	6	6	nw.	S. H. Gerrish.
Sacramento (2)	Napa	255	1	59.2		93	10	34	30	47	1.62	- 0.67	0.67	0.0	5	21	0	10	n.	B. F. Kettlewell.
St. Helena	Monterey	40	35	59.5	+ 2.0	93	10	40	31	41	0.17	- 0.59	0.17	0.0	1	22	8	1	w.	Miss E. Ruth Abbott.
Salinas	San Bernardino	1,054	17	64.2	+ 1.1	102	24													



TABLE 1.—Climatological data for October, 1909. District No. 11—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.			Number of cloudy days.
California—Cont'd.																				
Tracy**	San Joaquin.....	64	29	73.6	+10.1	87	5	60	1	.....	0.00	- 0.60	0.00	0.0	0	28	0	3	nw.	Agent, So. Pac. Co.
Tulare (near).....	Tulare.....	274	15	63.0	- 0.5	88	10	33	30	40	0.20	- 0.21	0.11	0.0	3	27	3	1	w.	J. T. Bearss.
Ukiah.....	Mendocino.....	620	16	59.1	+ 0.7	92	9	35	24†	49	2.36	+ 0.62	0.75	0.0	9	14	7	10	nw.	Dr. George McCowen.
Upland.....	San Bernardino.....	1,750	12	63.2	+ 0.7	95	23†	40	19†	45	0.36	- 0.74	0.36	0.0	1	25	3	3	w.	A. P. Harwood.
Upper Lake.....	Lake.....	1,350	24	58.4	- 1.4	89	13	34	29	42	1.84	+ 0.35	0.60	0.0	8	21	5	5	nw.	C. M. Hammond.
Vacaville.....	Solano.....	175	21	62.2	- 2.2	94	10	37	29	47	1.41	- 0.03	0.58	0.0	8	12	17	2	sw.	G. O. Coburn.
Valley Springs**	Calaveras.....	673	20	65.0	+ 1.8	89	11	47	30	.....	1.30	- 0.13	0.36	0.0	7	18	8	5	nw.	Agent, So. Pac. Co.
Visalia.....	Tulare.....	334	21	66.4	.....	85	2	40	28	.....	0.75	.....	.....	.....	.....	.....	.....	.....	.....	Agent, Santa Fe R. R.
Warner Springs.....	San Diego.....	3,165	1	61.4	.....	94	24	34	27	50	0.00	.....	0.00	0.0	0	.....	.....	.....	.....	Mrs. F. S. Sanford.
Wasco.....	Kern.....	336	9	58.2	.....	80	14†	40	30	34	0.32	.....	0.32	0.0	1	26	3	2	.....	Agent, Santa Fe R. R.
Watsonville.....	Santa Cruz.....	23	13	57.2	- 1.2	80	23	35	29	39	0.79	- 0.97	0.32	0.0	6	6	17	8	sw.	Spreckels Sugar Co.
Westley**	Stanislaus.....	90	20	66.9	+ 0.7	85	12†	45	31	.....	0.35	- 0.48	0.35	0.0	1	29	0	2	n.	Agent, So. Pac. Co.
Wheatland.....	Yuba.....	84	22	61.4	- 1.1	85	9	43	25†	34	1.43	- 0.24	0.46	0.0	8	17	11	3	se.	Wm. Lombard.
Willows.....	Glenn.....	136	30	61.9	- 5.3	90	12	37	30	39	0.75	- 0.24	0.30	0.0	7	17	5	9	s.	M. T. Harrington, jr.
Yosemite.....	Mariposa.....	3,945	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	C. W. Tucker.

\* Precipitation included in that of the next measurement.

\*\* Temperature extremes are from observed readings of the dry-bulb; means are computed from observed readings.

† Also on other dates.

‡ Separate dates of fall not recorded.

§ Data are from standard instruments not supplied by the U. S. Weather Bureau.

|| Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

¶ Estimated by observer.

||| Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.

\*, †, ‡, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

## MONTHLY WEATHER REVIEW.

OCTOBER, 1909

TABLE 2.—Daily precipitation for October, 1909. District No. 11, California.

Stations.	River basins.	Day of month.																														Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		31
Oregon.																																	
Klamath Agency.....	Klamath.....																																
Klamath Falls.....	do.....	.08	.17			.01	.01													.21	.11	.10							.02	.06	.10	.42	1.29
Lakeview.....	Pitt.....																																
Long Valley.....	Pitt.....	.15	.55			.02															.05								.25	.15	.24	.18	1.59
Merrill.....	Interior.....																			.10												10	0.20
Yonna.....	Interior.....	.11	T.	T.		.01													T.	.22	.16	.11							.10	.05	.04	.26	1.00
California.																																	
Aguanga.....	Coast.....																			.28	.02	T.							.02	.07	.25		0.00
Alturas.....	Sacramento.....	.07	.50	.17	.01		.01													.06	.49	.08							.26	.15	.01	.02	1.48
Anderson.....	do.....	.25	.02	.14																.25									.42	.19			1.27
Angeles Camp.....	San Joaquin.....	.41																											.05				0.20
Angiola.....	do.....	.15																											.01				0.07
Antioch.....	do.....		.04	.02																													1.32
Aptos.....	Coast.....	.12	.42																	.22	.26								.18		.12		0.26
Arrowhead Springs.....	do.....		.21	.05																													2.55
Auburn.....	Sacramento.....	T.	.25		.20															.15	.45	.10							1.10	.20	.10		0.32
Azusa.....	Coast.....		.32																														0.00
Bagdad.....	Desert.....																																0.00
Bakersfield.....	San Joaquin.....																																0.10
Barstow.....	Desert.....																																0.10
Bear River.....	San Joaquin.....																																0.10
Bear Valley (1).....	Sacramento.....	.78	.74	.18	.10															.78	.64	.46							1.80	.66		6.14	
Bear Valley (2).....	San Joaquin.....	T.	T.	.43																.79	T.	.26							.09			0.54	
Beckwith.....	Sacramento.....	T.	.14	.17	.02		T.																						.44	.06	.26		2.14
Ben Lomond.....	Coast.....	1.17																		.68									.20			2.30	
Berkeley.....	do.....		.50	.07																.08	.19	.14							.27	.09		1.34	
Big Bar.....	Sacramento.....																																0.00
Biggs.....	do.....	.45																															0.10
Bishop.....	Owens.....																			.25	.05									.57		1.52	
Blocksburg.....	Coast.....	.82	.05		T.	T.														40	1.47	.10	.21						1.41	.45	.47	.47	5.98
Blue Canon.....	Sacramento.....	T.	.80	.50	.30															.50	.70	.40							1.00			4.60	
Blythe.....	Colorado.....																																0.00
Boulder Creek.....	Coast.....	.07	.62		.05																.25									.32	.05		1.56
Bowmans Dam.....	Sacramento.....																																26.59
Branscomb.....	Coast.....	1.34	.08																	.35	1.82	.05	.15						1.75	.60	18	1.12	7.44
Brawley.....	Desert.....																																0.00
Brush Creek.....	Sacramento.....	.57	.39	.47	T.		T.													.08	1.51	.01	.03						.77	.65	.02	.01	4.51
Butte Valley.....	do.....	.30	.17	.18																T.	1.06								.64	.40	.22		2.97
Calexico.....	Desert.....																																0.00
Caliente.....	San Joaquin.....			.41																										.21	.02	.19	1.93
Calistoga.....	Coast.....	.15	.23																	1.08	.05									T.		T.	
Campbell.....	do.....																																0.00
Campo.....	do.....																																0.00
Camptonville (near).....	Sacramento.....	.68	.20	.37	.04															T.	2.55		.05						1.13	.06	.48		5.56
Cedarville.....	Mountain Lakes.....	.05	.53				.04													T.	.22								.02	.05	.03	T.	0.94
Chico.....	Sacramento.....	.25	.10	.09																.11	.30								.35	.24		1.34	
Chico (near).....	do.....	.35		.11																	.35	T.							.30	.25		1.36	
China Flat.....	Coast.....	.77				T.	T.													.21	1.32		.31					1.03	.74	.44	1.35	6.17	
Chino.....	do.....		.25																													0.25	
Chico.....	Sacramento.....		.90	.30																												2.10	
Claremont.....	Coast.....	.02	.26			.01																								.40	.50		0.29
Clear Lake.....	Klamath.....																			T.	T.											0.29	
Cloverdale.....	Coast.....	.30	T.																	.33	.57	.16	.02						.37	.25	.10	T.	2.10
Colfax.....	Sacramento.....		.60	.02	.15																								.70	.20	.25		3.22
Colgate.....	do.....		.68	.08	.04																.34	.20	.11						.83	.07	.45		2.80
Colusa.....	do.....			.08																	.34									.03	.16		0.61
Corning.....	do.....	.16	.10																	.25													0.63
Corona.....	Coast.....		.15																														0.15
Crescent City.....	do.....																																0.00
Crocker.....	San Joaquin.....			2.01																	.35									1.55	T.		3.91
Cuyamaca (1).....	Coast.....		.06																														0.06
Cuyamaca (2).....	do.....		.06																														0.06
Daunt.....	San Joaquin.....		.85	.20																										.38			1.43
Davisville.....	Sacramento.....	.32	.02	.03																	.18		.02						.02	.02			0.81
Deer Creek.....	do.....	.55	.50	.25																T.	1.19		.44						2.30	.20	.70		6.13
Delta.....	do.....	.45	.05		.07																								.65	.50	.23		3.45
Denair.....	San Joaquin.....																																0.00
Descanso.....	Coast.....																																0.00
Dinuba.....	San Joaquin.....																																20.46
Dobbins.....	Sacramento.....	.45	.23	.10																.02	.54		.11						.86	.33	.13		2.77
Downieville.....	do.....	.33	.41	.15																									1.20	.17	.50		4.23
Dudleys.....	San Joaquin.....	.09	.73	.29																	.22								.75				2.08
Dunnigan.....	Sacramento.....		.60																	.50													1.10
Dunsmuir.....	do.....	.15	.03	.02																	.65	.30		.95					.80		.4		



Stations.	River basins.	Day of month.																																Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
<i>California—Cont'd.</i>																																		
Greenville.....	Sacramento.....	.30	.20	.47	.08														1.17									.68	.26	.36		3.52		
Gridley.....	do.....	.19	.34	.22															.63									.32	.22			1.92		
Groveland.....	San Joaquin.....	.11	.63	.24															.18								1.26	.02	.14			2.58		
Guinda.....	Sacramento.....	.30	.40	.14															.38									.12				1.34		
Hanford.....	San Joaquin.....	.36																															0.36	
Head Dam.....	Sacramento.....	.50	.55															.04	1.17		.18						1.32	.41	.21			4.38		
Healdsburg.....	Coast.....	.23	.15															1.18	.23	.02								.27	.25			2.33		
Heber.....	Desert.....																																0.00	
Helen Mine.....	Coast.....	.85	.18															36	2.32	.44	.13							.63	.44	.10		5.45		
Hollister.....	do.....		.51	.05															.01									.06	.02	.01		0.66		
Hornbrook.....	Klamath.....																																0.06	
Hot Springs.....	San Joaquin.....		.71																														0.96	
Hullville (near).....	Coast.....	.40	.01	.02	.10														.35	1.17	.04							.71	.42	.08	.24	3.54		
Idyllwild.....	do.....																																0.00	
Independence.....	Owens.....	.01	T.																														0.01	
Indio.....	Desert.....																																0.00	
Inskip.....	Sacramento.....	.32	.10	.52																													0.00	
Ione.....	San Joaquin.....																		.41	2.29									T.	.70	1.85	5.78		
Iowa Hill.....	Sacramento.....	.32	.36	.06															T.	.82		.32						1.37	.35	.12		3.72		
Isabelle.....	San Joaquin.....		.26					</																										

## MONTHLY WEATHER REVIEW.

OCTOBER, 1909

TABLE 2.—Daily precipitation for October, 1909. District No. 11—Continued.

Stations.	River basins.	Day of month.																														Total.		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		31	
California—Cont'd.																																		
Palermo.....	Sacramento.	.50	.09	.17																.76									.20		.26		1.98	
Palm Springs.....	Desert.....																																0.00	
Parkfield.....	Coast.....	.44	.32																														0.76	
Pasadena.....	do.....	.62	.03																														0.65	
Paso Robles.....	do.....		.43	.29																													0.72	
Peachland.....	do.....	.73	.04	.02																													2.54	
Penstock Camp.....	San Joaquin.....	.70	.15																.36	.72	.08	.03							.37	.17	.02	2.40		
Peyton.....	Sacramento.....		.53	.06															.13											.09			0.81	
Phoenix Dam.....	San Joaquin.....	.13	.64	.06															.15											.72	.02	.10	1.82	
Pilot Creek.....	Sacramento.....	.55	.20	.16															T.	T.	1.18		.56							1.56	.30	.16	4.67	
Pine Crest.....	Coast.....		.75	.09														.04															0.88	
Pittville.....	Sacramento.....	.60	.30		.60															.80										.60			2.90	
Placerville.....	do.....		.42	.06																.03	.58	.28							.77	.20	.24	2.58		
Point Lobos.....	Coast.....	.29	.74	.02																.03	.03	T.	T.							.01	.09		1.21	
Point Loma.....	do.....								.02																								0.02	
Point Reyes.....	do.....	.41																	.16	.10	.07							.07	.04	.05			0.90	
Pollasky.....	San Joaquin.....																																0.20	
Porterville.....	do.....	.27	.21																												.02		0.50	
Poway.....	Coast.....																																0.78	
Priest Valley.....	do.....		.60	.18																													3.78	
Quincy.....	Sacramento.....	.28	.26	.34	.12															T.	1.00	T.	.20						.95	.28	.35	0.82		
Red Bluff.....	do.....	.14	.06	.10																.07	.23								.10	.12	T.	1.43		
Redding.....	do.....	.46	.02	.12																.01	.48	.06							.17	.11		20.05		
Redlands.....	Coast.....																																0.33	
Redley.....	San Joaquin.....	.05	.08	.30																										T.			1.38	
Repress.....	Sacramento.....		.48																.32	T.		.01							.44		.13	0.73		
Rialto (near).....	Coast.....		.65																										.08			0.34		
Rio Vista.....	Sacramento.....					.12	T.																.22	T.								0.06		
Riverdale.....	Coast.....		.01															.03												.02		1.51		
Rocklin.....	Sacramento.....	.02	.52	.02	.10													.02										.25	.18	.08		3.34		
Rohnerville.....	Coast.....	.76																		.15	.56	.17							.93	.60	.13	.44	1.27	
Sacramento (1).....	Sacramento.....	.39		.17																T.	.15								.15	.01		1.56		
Sacramento (2).....	do.....	.81	.06	.24																T.	.20								.22	.03		T.	1.62	
Saint Helena.....	Coast.....	.23	.31	.04																.67									.37			0.17		
Salinas.....	do.....																												.17			0.04		
San Bernardino.....	do.....		.04																				T.									0.00		
San Diego.....	do.....																															1.23		
San Francisco.....	do.....	.49	.34	T.														T.		.04	.05	.01							T.	.20	.10	T.	0.00	
San Jacinto.....	do.....																															0.72		
San Jose.....	do.....	.30	.36	.02																	.02								.02	T.		.01	0.74	
San Leandro.....	do.....	.27	T.	.05																	.07								.20	.14		0.54		
San Luis Obispo.....	do.....	.33	.17	T.														T.	.01										.03			0.72		
San Mateo.....	do.....	.08	.31																	.10		.10							.03		.10	0.48		
San Miguel.....	do.....	.40	.08																													0.15		
San Miguel Island.....	Ocean.....		.15																													0.00		
Sanger.....	San Joaquin.....																															0.12		
Santa Ann River.....	Coast.....		.12																													0.57		
Santa Barbara.....	do.....		.54	.03															T.													0.63		
Santa Clara.....	do.....	.36	.19	.02																.75		.05								.02	T.	.04	1.80	
Santa Cruz.....	do.....	.75																												.25		0.50		
Santa Margarita.....	do.....	.20	.30																													0.75		
Santa Maria.....	do.....	.53	.22																													0.44		
Santa Monica.....	do.....	.32	.12																													1.73		
Santa Rosa.....	do.....	.48	.04	.01																.26	.53	.04	.08						.16	.11	.02	1.82		
Sausalito.....	do.....	.58		.70																												.54	0.04	
Selma.....	San Joaquin.....	.04																												T.		0.00		
Shasta.....	Sacramento.....	.16	.05	.07															1.87	.16									.38	.12	.18	.20	.13	3.32
Shingle Springs.....	San Joaquin.....	.48																					.30						.60		.50	2.08		
Sierra Madre.....	Coast.....		.87																													0.87		
Sisquoc Ranch.....	do.....		.95																													0.95		
Sisson.....	Sacramento.....	.55																	.64	.12	.80								.09		.20	.02	.35	2.77
Soledad.....	Coast.....																															20.48		
Sonora.....	San Joaquin.....	.07	.36																	.15										.57	.03	.11	1.29	
Southeast Farallon.....	Ocean.....	.13	.01	T.																.05	.02	.06	.01						.04	.07	.17	0.56		
Spreckels.....	Coast.....																															20.54		
Stirling City.....	Sacramento.....			.60																1.75	.85	.05								.12	.20	3.57		
Stockton (1).....	San Joaquin.....	.66	.05	.10	.03															.08									.08		.06	1.06		
Storey.....	do.....	.65																											.02			0.67		
Suisun.....	Sacramento.....	.16	.39	.13																	.34	.02							.05		.20	1.29		
Summerdale.....	San Joaquin.....	.13	.32	.40																									.43	.25	.02	2.55		
Summit.....	Sacramento.....	.32	.10	.38	.06															.20									.60			1.66		
Surrey.....	Coast.....	.69	.63																		.34		.03						.02			1.34		
Susanville.....	Mountain Lake.....	.68	.12	.45	.05																								.07	.06	.12	1.32		
Tamarack.....	Sacramento.....	.11	.70	.64																.61									.81					



TABLE 3.—Maximum and minimum temperatures at selected stations for October, 1909. District No. 11, California.

Date.			Lakeview, Oreg.		California.																											
					Alturas.		Barstow.		Branscomb.		Brawley.		Colusa.		Eureka.		Fresno.		Independence.		Los Angeles.		Mount Tamal- pais.		Nevada City.		Porterville.		Red Bluff.			
Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.			
1	60	40	84	48	55	44	93	66				63	51	72	51	72	46	72	59	49	46	54	47	75	46	57	52					
2	51	42	77	54	64	40	85	62				54	48	65	55	63	42	68	55	55	46	66	45	67	45	61	52					
3	57	42	71	43	68	41	81	59				53	51	70	53	62	35	68	55	53	45	50	43	72	50	58	56					
4	62	42	74	41	70	44	86	55				56	51	71	51	67	38	72	52	58	45	69	36	70	51	76	51					
5	66	28	78	44	75	48	87	50				57	47	76	49	67	43	71	54	65	54	77	36	76	50	80	54					
6	63	44	81	45	77	47	90	50				56	48	80	50	70	41	72	58	62	53	76	47	80	50	78	62					
7	61	26	82	46	78	46	92	58				54	42	79	52	74	42	72	58	68	54	77	41	82	50	78	59					
8	71	23	80	48	80	48	91	54				58	45	83	55	75	46	83	52	72	58	81	58	85	51	85	60					
9	79	27	80	38	85	50	91	60				77	48	89	57	78	48	94	65	76	62	85	41	90	52	90	58					
10	83	31	84	45	86	52	94	52				74	54	91	55	80	48	92	67	76	70	86	43	91	52	90	56					
11	77	36	88	48	84	50	98	54				57	49	88	56	80	44	90	61	73	64	76	45	88	55	78	57					
12	79	29	87	51	83	49	93	51				53	49	86	54	79	48	76	55	75	64	87	47	89	55	91	58					
13	82	28	81	47	79	48	92	55				54	48	89	58	80	46	72	58	78	68	85	43	90	52	87	57					
14	84	28	80	47	77	49	95	54				51	48	89	54	80	43	72	53	77	66	87	44	90	52	88	56					
15	83	30	87	45	68	47	95	54				50	47	84	50	79	41	62	56	68	45	81	42	86	52	87	55					
16	76	30	80	51	51	40	84	57				55	47	70	49	78	42	68	55	47	43	70	39	73	50	66	50					
17	74	28	83	46	63	41	88	50				64	48	75	43	78	45	70	53	59	42	76	35	76	44	70	47					
18	66	25	86	47	60	40	92	51				64	48	74	50	78	42	68	52	50	44	66	37	79	47	66	48					
19	59	36	79	43	54	48	93	48				63	56	78	51	79	41	70	51	57	49	59	47	78	47	70	55					
20	61	36	78	48	58	42	89	48				68	53	76	46	72	38	70	51	52	49	69	43	77	47	70	52					
21	56	38	78	48	61	38	90	48				66	49	76	49	75	38	72	55	59	47	68	47	78	44	68	52					
22	74	26	81	39	69	39	92	48				66	47	79	46	75	38	90	54	59	49	79	35	80	46	75	46					
23	75	24	83	41	74	38	97	56				61	45	81	48	76	35	98	65	70	56	85	35	85	44	80	46					
24	79	21	83	41	78	41	97	55				64	39	83	48	78	37	99	68	72	64	87	35	86	45	84	49					
25	79	19	82	48	82	44	98	53				65	45	84	52	80	36	94	64	73	66	86	38	87	46	80	48					
26	78	19	82	40	76	42	96	50				52	45	82	47	78	38	86	53	70	59	84	36	85	46	79	47					
27	68	20	82	40	70	41	90	51				63	50	82	47	77	42	73	47	65	46	74	55	86	45	70	47					
28	59	40	81	46	55	40	88	46				57	45	69	48	76	48	64	55	51	41	55	46	74	45	64	50					
29	51	29	76	42	45	32	78	58				55	44	63	42	60	31	69	54	48	40	55	37	65	43	54	44					
30	41	24	74	42	51	36	77	51				58	46	64	44	59	38	70	50	51	42	58	35	65	35	58	43					
31	50	30	69	30	51	38	79	49				58	53	68	40	61	29	79	50	55	45	62	34	69	40	61	49					
Means	67.9	30.4	80.4	44.6	68.6	43.6	90.0	53.3				59.5	48.0	77.9	50.0	73.7	40.9	76.6	56.0	62.7	52.3	73.2	41.7	79.8	47.6	74.2	52.1					

Date.	California.																					
	Redlands.		Sacramento.		San Diego.		San Francisco.		San Jose.		San Luis Obispo.		Santa Barbara.		Santa Rosa.		Shason.		Stockton.		Summit.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1	75	53	55	52	67	59	58	52	60	48	65	48	67	55	62	51	58	36	69	53	59	35
2	67	53	68	53	67	58	64	53	67	54	60	53	65	56	68	48	60	38	66	53	57	32
3	70	49	68	54	67	55	59	53	61	52	55	50	67	49	59	52	57	33	60	53	43	34
4	75	44	70	48	66	50	60	52	68	52	72	50	70	49	66	45	57	32	68	47	54	32
5	78	45	75	48	68	53	66	52	73	52	77	52	66	51	71	45	58	33	71	48	65	32
6	80	46	74	55	67	58	62	54	72	49	73	47	68	50	76	51	66	32	75	52	62	35
7	78	50	76	53	67	60	68	54	76	45	80	52	69	54	76	45	67	33	76	51	62	32
8	92	50	81	55	69	56	81	55	85	44	87	52	78	54	86	43	66	32	78	51	72	33
9	92	50	85	57	86	54	86	60	89	47	96	55	98	54	91	46	70	31	84	52	75	38
10	94	53	82	57	88	62	86	61	90	50	97	56	94	54	90	46	78	40	83	53	79	41
11	93	57	75	59	85	62	70	53	79	54	87	54	81	52	85	51	80	43	76	53	77	39
12	83	53	87	57	66	60	63	50	77	46	74	53	78	52	80	45	78	31	83	54	82	43
13	82	44	85	55	66	58	58	49	73	47	70	51	69	51	75	45	75	35	81	52	81	39
14	92	48	83	52	66	57	58	50	70	52	67	51	68	52	71	50	75	36	83	52	83	42
15	64	45	73	50	64	59	55	50	57	51	57	52	60	55	56	48	76	37	70	50	82	41
16	67	53	64	45	64	58	59	53	59	53	59	49	68	53	59	51	76	40	64	47	76	39
17	74	51	68	45	66	56	64	53	71	47	67	40	64	47	69	36	80	38	68	43	62	32
18	75	43	65	48	66	55	61	52	69	43	64	48	67	49	62	36	68	38	66	46	54	31
19	72	41	68	54	67	57	65	58	72	50	71	48	75	48	68	54	66	37	70	52	59	32
20	82	43	72	56	67	56	67	56	78	49	78	52	74	48	65	55	68	37	72	52	62	35
21	79	43	72	54	67	57	66	55	72	47	77	54	70	41	69	49	66	30	70	53	77	38
22	92	46	74	47	76	53	72	52	76	42	85	51	79	45	74	38	64	30	73	45	62	32
23	97	51	77	48	89	58	76	55	81	42	94	44	92	47	80	38	75	31	76	44	65	32
24</																						

Climatological Data for October, 1909.  
DISTRICT No. 12, COLUMBIA VALLEY.

EDWARD A. BEALS, District Editor.

GENERAL CLIMATOLOGICAL CONDITIONS.

The month of October was one of ideal weather in this district. There was an unusually large number of bright sunshiny days with high day temperatures while the night temperatures were but slightly below the normal. This condition caused the mean temperature for the district to be somewhat above the normal for October. There were the usual killing frosts east of the Cascade Mountains, but the open weather of the preceding month had allowed all crops to mature and little or no damage resulted. West of the above-mentioned mountains no damaging frosts were reported, and but few light frosts had occurred. There were three well-marked rainy periods during October. These occurred during the first week of the month, between the 18th and 21st, and from the 28th to the 30th. During the first two periods the precipitation while general was light and there was a marked deficiency until the last few days of October. The autumn storms had passed eastward at a high latitude until toward the close of the month, when a typical winter storm of decided energy and wide extent appeared off the coast on the afternoon of the 27th, and by the night of the 28th the rain area had extended over the entire district and general and generous rains continued to fall at the close of the month. This storm caused the first rain of the season in some sections, and the first snow of any consequence this fall fell in the mountain sections. Some of our stations at the higher levels reported from 8 to 9 inches of snow at the close of the month. High southeasterly winds occurred along the coast from the 28th until the close of the month, but no damage was reported. In Idaho thunderstorms accompanied with hail occurred during the first few days of the month, and in Idaho and eastern Oregon at the close. Near the close of the second and beginning of the third decade both solar and lunar halos were observed frequently. A few stations reported auroras.

An earthquake varying from light to moderate intensity occurred in southwestern Oregon and northern California on the evening of the 28th, between 10:45 and 11:05 p. m. The shock was quite noticeable at some places, causing houses to rock and dishes to rattle, but no damage was reported. At some places it was reported as being more pronounced than the San Francisco earthquake of 1906. Neither our observers nor the press gave the direction of the vibrations.

TEMPERATURE.

The temperature was above the normal in all sections of the district except in portions of the Snake and Columbia valleys in Washington, and portions of Bonner, Blaine, and Elmore

counties, Idaho, where it was slightly below. The departures were uniformly positive but small, and in the district as a whole, the temperature was above the normal for October. The warmest portion of the month was the first decade, and during this period most of the maximum temperatures occurred. High temperatures also occurred between the 12th and 15th, and in the early part of the third decade. The highest mean temperatures occurred in the valleys of the Columbia, Snake, and Willamette rivers and coast counties where it ranged from 50° to 56°, and the lowest occurred in the mountain regions near the headwaters of the Snake River in Wyoming and Idaho where it was slightly less than 40°. The highest temperature recorded in the district was 96° at Hood River, Oreg., on the 9th; the lowest was 5° at Blackfoot Dam on the 8th, and McCall on the 31st, both in Idaho.

PRECIPITATION.

The average precipitation for the month was above the normal in the western portions of Washington and Oregon, but throughout the other sections of the district it was less than usual for October. Taking the district as a whole, the precipitation was below the normal. The greatest monthly amounts occurred in the mountain regions of western Washington and western Oregon and ranged from 8 to 14 inches. The greatest 24-hour fall was at Happy Home, Coos County, Oreg., where 3.10 inches fell on the 29th. The least monthly amount was a trace, at San Jacinto, Elko County, Nev. The distribution of the precipitation, both as to the number of days on which it occurred and the amounts recorded in different portions of the district are wide; varying from 8 to 23 rainy days in the western portions of Washington and Oregon and the Columbia Valley, with a maximum fall of 13.99 inches to from 1 to 5 days in central Oregon, southwestern Idaho, and northern Nevada where less than half an inch fell. No damaging rains occurred, and the ground was so dry that the run-off was very light.

RIVERS.

The rivers were nearly normal in all portions of the district, and as the precipitation near the headwaters of all streams had been below the normal, the stages at the close of the month were nearly the same as at the beginning. The fluctuation at no station exceeded 3 feet during the month. The Willamette was slightly below the normal for the month, but the Columbia and Snake were somewhat above. The small steep rivers on the west slope of the Cascades in Washington rose rapidly toward the close of the month owing to the heavy rains in that section after the 28th, but no damage was reported.



TABLE 1.—Climatological data for October, 1909. District No. 12, Columbia Valley.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.					Precipitation, in inches.					Sky.				Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.
Montana.																			
Anaconda.	Deer Lodge.	5,300	8	44.7 <sup>a</sup>		68 <sup>a</sup>	27	20 <sup>a</sup>	31	38 <sup>a</sup>	0.23		0.18	T.	4	16	11	4	C. D. Demond.
Bison Mountain.	Powell.	7,240									0.95		0.40	4.0	6	21	9	1	C. H. Anderson.
Columbia Falls.	Flathead.	3,100	13	44.5	+ 1.0	71	3	19	30	39	0.32	- 0.82	0.15	0.0	3	1	22	8	Mrs. I. M. Kennedy.
Como.	Ravalli.		2	44.6		66	10	22	30	31	0.36		0.18	0.0	4	14	10	7	Hiram Platt.
Darby.	do.	3,825									0.94		0.65	0.0	5	14	12	5	W. A. Kerlee.
Dayton.	Flathead.	2,800																	Charles M. Lawson.
East Anaconda.	Deer Lodge.	5,500	4	44.2		63	31	22	31	32	0.40		0.22	0.2	4	16	11	4	C. D. Demond.
Fortine.	Flathead.	2,975	4	42.8		72	5	18	17	43	0.45		0.11	T.	8	10	8	13	Mike Petery.
Hamilton.	Ravalli.	3,575	7	47.6		68	9	20	30	40	0.48		0.25	0.0	4	19	9	3	J. B. Curry.
Hat Creek.	Powell.	6,000									0.66		0.44	T.	2	15	13	3	M. K. Landreth.
Jocko.	Missoula.	3,100	1																George W. Robbins.
Kalispell.	Flathead.	2,965	11	44.9	+ 2.4	66	10	25	30	30	0.43	- 0.74	0.17	T.	7	7	15	9	U. S. Weather Bureau.
Lost Creek.	Deer Lodge.	5,200																	Frank Henault.
Missoula.	Missoula.	3,225	26	46.2	+ 1.3	70	3	23	30	35	0.34	- 0.77	0.20	T.	5				U. S. Weather Bureau.
Ophir.	Powell.	8,800									0.67		0.50	T.	2	16	10	5	E. S. Wilton.
Ovando.	do.	4,207	11																S. B. Muchmore.
Philipsburg.	Granite.	5,275	6	44.6		72	27	20	30	49	0.55		0.20	1.0	4	20	4	7	Prof. G. T. Bramble.
Pipestone Pass.	Jefferson.	7,000									1.06		0.36	1.5	6	11	15	5	Mrs. Th. Kiermeyer.
Plains.	Sanders.	2,475	11	46.7	+ 0.2	74	10	23	30	40	T.	- 0.80	T.	0.0	0	23	0	8	M. H. Pierce.
Pleasant Valley.	Flathead.	3,500	3	42.7		70	4	13	17	48	0.74		0.15	0.0	7	15	5	11	A. D. Stillman.
Polson.	do.	2,920	2	46.2		68	4	27	27	34	0.46		0.13	0.0	4				F. P. Brown.
St. Ignatius.	Missoula.	2,700	1	46.2 <sup>a</sup>		71	10	19 <sup>a</sup>	8	40 <sup>a</sup>	0.37		0.19	0.0	5	17 <sup>a</sup>	7 <sup>a</sup>	6 <sup>a</sup>	U. S. Reclamation Service.
St. Regis.	do.	2,650	2	45.6		74	3	19	17	44	1.47		0.89	0.0	3	0	31	0	R. D. Lee.
Saltese.	do.	3,600	5								1.30		0.50	0.0	4	22	0	9	E. K. Tarbox.
Snowshoe.	Flathead.	4,500	3	41.2		67	3	22	30	29	5.27		1.85	3.3	11	9	5	17	J. S. Riter.
Troy.	do.	1,880	15	51.8	+ 5.6	86	5	25	29	52	2.25	+ 0.42	0.60	T.	8	14	9	8	W. E. Milnor.
Upper Lake McDonald.	do.	3,200	3																F. F. Liebig.
Woodville.	Jefferson.	6,376									0.85		0.28	0.0	7	8	13	10	Anna Kinman.
Wyoming.																			
Afton.	Uinta.	6,200	6																A. V. Call.
Alta.	do.			40.8		67	2	12	8	46	1.67		0.80	8.0	8	15	6	10	Mrs. Lucy Brown.
Bedford.	do.	5,900	10	41.5 <sup>d</sup>	- 0.3	72 <sup>d</sup>	2	13 <sup>d</sup>	31	49 <sup>d</sup>	0.76 <sup>d</sup>	- 0.90	0.18	3.3 <sup>d</sup>	6 <sup>d</sup>	14 <sup>d</sup>	7 <sup>d</sup>	7 <sup>d</sup>	C. G. Heiner.
Snake River.	Yellowstone Park.	7,000	3	38.0		66	2	14	8	43	1.10		0.40	7.0	4	17	8	6	U. S. Army.
Nevada.																			
San Jacinto.	Elko.		5	39.5		71	11	12	31	47	T.		T.	T.	0	20	0	11	Moses Jones.
Idaho.																			
Albion.	Cassia.		9	48.7		76	23	16	31	52	1.39		0.32	1.0	8	17	8	6	G. A. Asline.
Almo.	do.										1.50		1.00	1.0	3	21	8	2	Wm. L. Eames.
Bear Valley.	Boise.																		Francis Wallis.
Blackfoot.	Bingham.	4,503	13	47.0	+ 1.1	74	16	12	31	49	0.99	- 0.08	0.54	5.0	5	15	15	1	E. A. Dowd.
Blanche.	Lincoln.			53.0		84	15	23	7	52	0.39		0.27	0.0	2				Solon A. Bray.
Bogus Creek.	Boise.	4,200																	F. P. Ingraham.
Boise.	Ada.	2,770	24	53.2	+ 2.9	75	15	29	8	33	0.73	- 0.55	0.24	0.2	5	10	11	10	U. S. Weather Bureau.
Bonanza.	Custer.	6,600																	Mrs. Emma Walter.
Bonniers Ferry.	Bonner.	1,850	3	45.3		71	5	22	17	37	1.43		0.39	0.0	7	8	18	5	W. H. Heideman.
Boulder Mine.	Boise.	4,800									2.13		0.70	4.5	7	17	5	9	Patrick Moriarty.
Buhl.	Lincoln.	3,800	4																Dr. D. P. Albee.
Burke.	Shoshone.	4,082	3	42.0		64	10	23	30	36	2.73		0.70	1.0	8	8	12	11	W. A. Hall.
Caldwell.	Canyon.	2,372	5	50.3		78	13	25	8	43	0.62		0.34	0.0	4	18	8	5	W. J. Bcone.
Camas.	Fremont.	4,815		42.5		70	2	11	31	52	0.69		0.50	0.0	3	18	0	13	Ednah Faulkner.
Cambridge.	Washington.	2,651	14	49.6	+ 0.8	79	11	21	27	49	0.96	- 0.26	0.65	0.2	3				C. H. Shepherd.
Chesterfield.	Bannock.	5,424	13																Chas. L. West.
Clawson.	Fremont.										1.32		0.80	6.0	6	21	5	5	E. J. Hopkins.
Coeur d'Alene.	Kootenai.	2,157	17																Jas. T. Scott.
Culdesac.	Nez Perce.	1,520		51.5		76	3	30	22	39	0.97		0.58	0.0	3	12	10	9	R. R. Richmond.
Dent.	do.	1,350	4	51.2		75	3	31	17	34	1.60		0.70	0.0	8	7	18	6	Emil Schuessler.
Driggs.	Fremont.	6,097	3	41.4		70	2	16	31	42	1.15		0.52	7.0	4	16	2	13	Walter H. Durrant.
Eddie.	do.			42.2		70	15	20	8	41	0.66		0.36	T.	3	25	4	2	Geo. B. Edie.
Emmett.	Canyon.	2,350	3	53.2		80	14	28	8	40	0.55		0.25	0.0	3	22	3	6	E. L. Marvin.
Forney.	Lemhi.	13		42.2		74	4	10	31	47	0.62	- 0.47	0.30	4.7	6	14	10	7	E. P. Treloar.
Garnet.	Elmore.	2,575	10	54.6	- 1.0	83	15	29	8	44	0.49	- 0.27	0.25	0.0	4	22	0	9	Mrs. Inez H. Davis.
Gilbert.	Nez Perce.	3,030		47.8		66	12	28	8	28			3.0	7	13	6	12	nw.	J. B. Loomis.
Glenns Ferry.	Elmore.	2,569	2	52.6		83	12	20	31	51	0.28		0.07	0.0	5	24	3	4	I. E. Perkins.
Grand Forks.	Shoshone.	3,000		43.6		70	3	20	18	41	2.29		0.56	0.0	7	15	5	11	H. F. Kottkey.
Grandview.	Owyhee.			48.6 <sup>b</sup>		78 <sup>b</sup>	18	22 <sup>b</sup>	8	52 <sup>b</sup>			0.0 <sup>b</sup>						N. G. Massey.
Guffey.	do.	2,381		56.2		83	12	29	8	44	0.59		0.19	0.0	6	27	0	4	F. N. Perry.
Hailey.	Blaine.	5,347	7	46.0 <sup>c</sup>		74 <sup>c</sup>	14	21 <sup>c</sup>	1	43 <sup>c</sup>	0.83 <sup>c</sup>		0.50 <sup>a</sup>	T. <sup>a</sup>	4 <sup>a</sup>	17	10	4	U. S. Forest Service.
Henry.	Bannock.																		N. W. Irsfield.
Hot Springs.	Owyhee.	2,752	4	54.9		80	17	26	27	51	0.55		0.30	0.0	3	17	9	5	J. M. Waterhouse.
Idaho City.	Boise.	4,000	11								0.88		0.30	0.0	5				Mrs. Emma Hammer.
Idaho Falls.	Bingham.	4,742	14	46.2	+ 1.4	71	16	18	31	46	0.75	- 0.25	0.40	T.	3	23	4	4	Dr. T. M. Bridges.
Indian Valley.	Washington.	2,999									1.53		0.65	1.0	7	11	9	11	W. E. Henke.
Irwin.	Bingham.	6,500																	Miss Martha A. Beam.
Kellogg.	Shoshone.	2,330	5	46.6		72	10	24	17	38	1.51		0.38	0.0	9	11	0	20	W. McM. Huff.
Kooskia.	Idaho.	1,261		49.1		76	2	20	21	50	1.47		0.55	0.0	4	18	7	6	U. S. Forest Service.
Lake.	Fremont.	6,700	17																J. Sherwood.
Lakeview.	Bonner.	2,250	12	46.9	+ 0.3	68	1	29	27	32	1.95	- 0.27	0.60	0.0	6	10	5	16	E. D. Faust.
Landore.	Washington.	5,300	6	43.4		70	10	20	8	35	2.78		0.92	8.0	11	17	9	5	Mrs. Emma L. Brown.
Lardo.	Boise.	5,050	5																

TABLE 1.—Climatological data for October, 1909. District No. 12—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.					Precipitation, in inches.				Sky.				Observers.				
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelting.	Number of rainy days, all or more.	Number of clear days.		Number of partly cloudy days.	Number of cloudy days.	Prevailing wind direction.	
Idaho—Cont'd.																					
Pocatello Nursery	Bannock	5,396	3	45.8		73	16	14	31	47			0.27	3.5	4	18	11	2	sw.	Peter F. Wrensted.	
Poplar	Bingham			45.2		72	2	14	31	50	0.65		0.27	0.0	4	12	12	7	sw.	Stuart Lee.	
Poplars	Canyon	2,425	10								0.70	+ 0.21	0.26	0.0	4					N. S. Dils.	
Porthill	Bonner	1,665	17	43.0	- 2.3	67	12	25	27	32	1.62	- 0.30	0.52	0.0	7	20	2	9		H. A. French.	
Pyle Creek	Boise	3,100	3								1.42		0.38	0.0	6	17	5	9		Walter L. Cole.	
Rupert	Lincoln	4,204	3	49.6		74	15	22	31	45	0.66		0.29	0.0	8	23	0	8	w.	Will Parry.	
St. Maries	Kootenai	2,263	13	47.5	+ 3.2	73	10	24	17	40	1.95	+ 0.91	0.50	0.0	11	6	13	12	e.	J. S. Turnbull.	
Salem	Fremont	5,000	5								1.04		0.62	3.0	5				sw.	Geo. H. A. Harris.	
Salmon	Lemhi	4,040	4	43.6		72	13	17	27	45	0.61		0.44	0.2	4	22			sw.	E. K. Abbott.	
Salmon River Dam	Twin Falls		2	50.8		77	27	23	31	42	0.50		0.23	0.2	5	20	4	7	nw.	Arch M. Gilbert.	
Sheep Hill	Boise	5,000									0.74		0.36	1.7	6					Clifford M. Gardner.	
Shoshone	Owyhee	6,200	3	48.6		71	10	20	31	38	0.30		0.13	0.0	5	19	12	0	w.	O. A. Pettit.	
Silver City	Lincoln	3,968									2.13		0.38	1.0	8					A. O. Treeman.	
Soldier	Blaine	5,140	13								0.90	- 0.14	0.35	5.5	5	23	4	4	w.	W. W. Leek.	
Standrod	Cassia		5	44.0		70	13	18	31	33	0.97		0.29	5.5	7	21	4	6	sw.	T. B. Jones.	
Sugar	Fremont		2	51.5		70	2	16	31	42	0.57		0.30	2.5	3	22	6	3	sw.	Geo. F. Webb.	
Sunnyside	Elmore	4,420		46.3		75	16	22	51	6.8	0.24		0.24	0.0	3				nw.	E. A. Wilmet.	
Tilden	Bingham	4,420		50.9		79	18	23	23	55	6.73		0.30	0.0	7	10	19	2	5	sw.	Mrs. W. A. Edwards.
Twin Falls	Twin Falls	3,825	4	44.0	+ 0.6	76	2	14	31	45	0.64	- 0.23	0.32	3.0	4	15	14	2	sw.	Clyde C. Anderson.	
Vernon	Fremont		12	45.2		66	5	26	30	33	2.11		0.55	0.0	12				e.	A. M. Slatery.	
Wallace	Shoshone	2,728	2																	U. S. Weather Bureau.	
Warfield	Blaine	6,386																		Wm. H. Warfield.	
Wendell	Lincoln	3,400		51.9		81	16	21	8	52	0.34		0.18	0.0	3	20	9	2	w.	Chas. L. Dingler.	
Washington.																					
Aberdeen	Chehalis	162	18	51.8	- 0.8	77	11	34	17	30	2.22	- 0.32	0.94	0.0	9	11	16	4	w.	C. Weatherwax.	
Anacortes	Skagit	60	15	50.9		66	11	35	8	28	5.94		1.27	0.0	14	13	1	17		Douglass Allmond.	
Baker	do.	200	3	51.2		87	4	33	17	36	3.21	+ 0.85	0.70	0.0	17	9	13	9		Robt. M. White.	
Bellingham	Whatcom	60	14	52.0	+ 1.0	73	20	32	17	31	3.85	+ 0.58	1.06	0.0	17	7	3	21	se.	Sanford B. Mayhew.	
Blaine	do.	53	12	49.2	+ 1.3	65	9	29	17	28	2.75	- 0.27	0.62	0.0	10					G. A. Ruring.	
Bremerton	Kitsap		2								4.22		1.04	0.0	10					U. S. Navy Yard.	
Cedar River	King																			Geo. Landsburg.	
Centralia	Lewis	212	16	53.2	+ 1.0	83	11	29	17	40	3.59	+ 0.11	0.85	0.0	12	10	7	14	s.	I. S. Turner.	
Cheney	Spokane	2,351	10	48.0		85	13	22	27	52	0.64	- 0.83	0.22	0.0	4	0	14	17		G. A. Fellows.	
Chopaka	Okanogan	1,200	1	47.2		74	10	23	27	38	0.81		0.41	0.0	9	5	8	18	sw.	Mrs. J. S. Myers.	
Clealum	Kittitas	1,930	10	45.9	- 1.4	72	5	23	17	35	1.27	- 0.65	0.25	0.0	11	18	4	9	se.	J. A. Balmor.	
Clearbrook	Whatcom	140	6	48.9		71	10	26	17	37	6.08		1.33	0.0	17	3	14	14	ne.	Geo. Gibbs.	
Clearwater	Jefferson	135	13	49.2	- 2.2	62	9	35	17	18	12.10	+ 1.28	2.90	0.0	19	13	5	13		Alfred Ritchie.	
Colfax	Whitman	2,300	20	49.3	- 0.5	78	10	19	17	48	1.87	- 0.13	0.34	0.0	9					W. H. James.	
Colville	Stevens	1,635	9	46.9	+ 1.8	81	1	24	17	51	1.32	+ 0.15	0.42	0.0	7	14	6	11	w.	W. L. Sax.	
Conconully	Okanogan	2,300	9	47.2		72	10	28	26	34	0.93		0.37	0.0	9	12	8	11		Wm. Baines.	
Coupeville	Island	150	13																	W. T. Howard.	
Crescent	Lincoln	2,250	9	45.6		70	10	24	17	36	1.28		0.56	0.0	7	15	7	9	sw.	Otto Wollweber.	
Davenport	do.	2,450		46.4		72	10	26	7	36	1.20		0.27	0.0	8	17	7	7	sw.	W. H. Reed.	
Dayton	Columbia	1,700	23	52.5	+ 2.1	78	10	32	8	36	2.62	+ 0.65	0.95	0.0	9	9	17	5		W. W. Hendron.	
Detroit	Mason	31	1	52.0		72	4	34	7	32	4.31		1.13	0.0	12	16	2	13	sw.	Walter O. Eckert.	
Dixie	Walla Walla	5,000											1.00	4.0	10	6	9	16	se.	T. Z. Andrews.	
Duckabush	Jefferson	380	1	49.0		75	14	28	17	39	11.76		3.08	0.0	12	4	10	17	sw.	Emery J. Finch.	
East Sound	San Juan	500	14																	Benj. E. Harrison.	
Ellensburg	Kittitas	1,571	21	46.7	- 0.7	72	9	20	27	36	0.58	+ 0.08	0.20	0.0	4	13	7	11		R. Lee Barnes.	
Ephrata	Grant	1,265	6																	D. Chaffee.	
Forks	Challam	480																		C. W. Palmer.	
Fort Simcoe	Yakima	1,427	15	54.4	+ 1.6	80	12	34	30	33	0.51	- 0.15	0.25	0.0	5	18	4	9		Dr. G. A. Landes.	
Gost Lake	Snohomish	2,900									7.77		1.30	0.0	14					C. M. Mackintosh.	
Gold Creek	Yakima	2,600									0.51		0.20	0.0	6	21	0	10		John W. Anderson.	
Goldendale	Klickitat	1,600	3	51.6		81	10	28	27	39	1.43		0.50	0.0	6	15	9	7	w.	Klickitat Abstract Co.	
Granite Falls	Snohomish	397	6								6.41		1.32	0.0	17	8	6	17	nw.	C. H. Cleaver.	
Hatton	Adams	1,100	4	51.4		83	10	32	8	47	0.62		0.16	0.0	10	8	8	15	s.	Dr. A. V. Marion.	
Huntville	Columbia	1,400	1								1.62		0.34	0.0	9	21	5	5		Dr. B. Hill.	
Irene Mount	Okanogan	3,013									6.87		0.21	0.0	7	9	9	13	n.	Mrs. E. W. Wheeler.	
Kennelick	Benton	367	14	52.7	- 0.8	78	16	30	26	42	0.72	+ 0.20	0.29	0.0	6					L. W. Soth.	
Kettle Falls	Stevens	1,265		48.0		73	2	28	17	36	1.59		0.46	0.0	8	14	12	5		Dr. A. E. Baldwin.	
Kiona	Benton	430	4	54.2		84	12	25	27	43	0.36		0.23	0.0	4	17	6	8	sw.	Dr. F. S. Hedger.	
Kosmos	Lewis	775	3	50.8		83	11	30	17	41	3.44		0.83	0.0	14	8	14	9	ne.	Hon. J. A. Ulsh.	
La Center	Clarke	250	12	49.7	- 1.9	75	11	30	17	31	3.33	- 0.73	1.18	0.0	11	11	12	8	sw.	Joseph Brothers.	
La Crosse	Whitman	1,400		49.8		80	10	20	17	48	1.49		0.38	0.0	9	16	6	9	e.	M. E. Schreck.	
Lake Clealum	Kittitas	2,171									1.99		0.54	0.0	13	9	4	18	nw.	U. S. Reclamation Service.	
Lake Kachess	do.	2,235		43.8		80	3	27	17	45	2.41		0.74	0.0	11	11	10	10	e.	Do.	
Lake Keechelus	do.	2,479	1								3.26		0.60	0.2	10	9	1	21		Do.	
Lakeside	Chelan	1,116	18	51.2	+ 0.2	75	4	34	27	32	0.90	+ 0.20	0.35	0.0	8	7	11	13	e.	W. H. Van Meter.	
Laurel	Klickitat	1,900									2.94		1.20	2.0	7	17	5	9	w.	L. S. Strout.	
Lester	King	1,614	5	48.6		78	10	28	26												



TABLE 1.—Climatological data for October, 1909. District No. 12—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.				Sky.				Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.		Number of cloudy days.
Washington—Cont'd.																			
Ritzville.....	Adams.....	1,825	10							0.83	+ 0.45	0.20	0.0	9				Agent, No. Pac. Ry.	
Rock Lake.....	Whitman.....	1,750	3															P. M. Ramsey.	
Rosalia.....	do.....	2,425	17	48.8	+ 0.7	71	10	28	17	2.26	+ 0.83	0.86	0.0	8	14	10	7	Hans Mumm.	
Russell's Ranch.....	Yakima.....	2,870								1.02		0.38	0.0	7				John Russell.	
Seattle (1).....	King.....	123	18	52.2	+ 1.4	73	11	40	17	2.86	- 0.02	1.28	0.0	10	1	12	18	U. S. Weather Bureau.	
Seattle (2).....	do.....									3.10		2.64	0.0	12	12	4	15	Univ. of Washington.	
Sedro-Wooley.....	Skagit.....	38	12	51.2	- 0.5	77	11	31	7	3.50	+ 1.39	2.00	0.0	16	10	12	9	H. L. Devin.	
Sixprong.....	Klickitat.....	1,240	2	54.0		80	12	35	25	3.50		0.16	0.0	7	15	5	11	C. E. Comstock.	
Skagit Power Dam.....	Whatcom.....																	Skagit Power Co.	
Snohomish.....	Snohomish.....	50	15	51.8	+ 0.4	78	31	27	18	3.7	- 0.03	1.10	0.0	16	9	6	16	Irving B. Vestal.	
Snoqualmie Falls.....	King.....	667	10	49.4	- 1.5	72	11	29	17	2.9	- 0.68	0.90	0.0	16	18	0	13	O. N. Wiswell.	
Snyder's Ranch.....	Okanogan.....	2,200								0.91		0.18	0.0	7	14	7	10	George M. Snyder.	
South Bend.....	Pacific.....	16	14															John L. Stevens.	
Spokane.....	Spokane.....	1,943	28	48.8	+ 1.5	72	10	28	17	3.2	- 0.37	0.31	0.0	10	5	11	15	U. S. Weather Bureau.	
Stehekin.....	Chelan.....	1,100	2															M. E. Field.	
Stokes Ranch.....	Okanogan.....	2,670																Amos Stokes.	
Sullivan Lake.....	Stevens.....	2,700																Mrs. Jennie D. McAbee.	
Sumner.....	Pierce.....	77	1	51.4		79	11	29	17	3.8		1.24	0.0	11	10	7	14	H. E. Thompson.	
Sunnyside.....	Yakima.....	740	14	51.5	+ 0.5	80	12	26	27	4.0	+ 0.29	0.24	0.0	7	16	7	8	U. S. Reclamation Service.	
Tacoma.....	Pierce.....	213	23	51.4	+ 0.8	74	11	35	17	2.7	- 0.05	0.98	0.0	12	9	3	19	U. S. Weather Bureau.	
Tatoosh Island.....	Clallam.....	86	24	51.0	+ 1.1	69	10	43	31	1.9	+ 1.03	1.58	0.0	19	4	6	21	Do.	
Tieton.....	Yakima.....	2,000																U. S. Reclamation Service.	
Touchee.....	Walla Walla.....	556	2	51.6		81	10	23	18	4.6	0.53	0.15	0.0	7	13	10	8	D. W. Dorrance.	
Touchee Ridge.....	Columbia.....	2,500								5.37		1.68	0.0	10	13	8	10	R. H. King.	
Trinidad.....	Douglas.....	900	5	53.8		77	10	32	26	3.0	0.37	0.26	0.0	2	18	5	8	J. C. Wheeler.	
Twisp.....	Okanogan.....	1,619	6															Wm. G. Hughes.	
Tye.....	Chelan.....	2,000								1.01		0.31	0.0	9	8	9	14	Elias McCrea.	
Vancouver.....	Clarke.....	100	34	53.4	+ 0.5	80	11	34	17	3.4	- 0.21	0.65	0.0	11	11	9	11	A. A. Quarnberg.	
Vashon Island.....	King.....	110	20	50.0	- 0.9	69	9	35	7	2.2	+ 0.28	0.90	0.0	12	15	1	15	Miss Gertrude McClintock.	
Wahluke.....	Grant.....	410	5	53.4*		78*	10	30*	28	3.6*		0.20	0.0	4	12	13	6	F. C. Koppen.	
Wallace.....	Okanogan.....	4,000								1.32		0.40	0.0	7	2	22	7	Geo. A. Wallace.	
Walla Walla.....	Walla Walla.....	1,000	25	54.6	+ 0.9	80	10	36	27	2.9	+ 0.08	0.63	0.0	9	12	11	8	U. S. Weather Bureau.	
Waterville.....	Douglas.....	2,624	19	46.3*	+ 0.4	75*	10	25	17	3.5*	+ 0.05	0.30	0.0	5	19	4	8	O. R. Hopewell.	
Wenatchee (near).....	Chelan.....	1,169	10	49.0	- 1.1	73	12	33	30	2.5	- 0.32	0.13	0.0	7	10	10	11	George Pitcher.	
West Branch.....	Spokane.....	2,600																Martin A. Murray.	
Wilbur.....	Lincoln.....	2,203	10	48.2	6.0	72	10	32	27	4.2	- 0.33	0.33	0.0	5	15	2	14	Rollin J. Reeves.	
Yale.....	Cowlitz.....	375	2	53.5		83	11	22	27	3.2	6.55	1.30	0.0	12	15	9	7	L. F. Williams.	
Zindel.....	Asotin.....	715	7	56.3		82	5	36	25	3.9	0.96	0.32	0.0	6	11	16	4	M. W. Zindel.	
Oregon.																			
Albany.....	Linn.....	214	33	53.8	+ 1.5	80	11	36	16	3.5	- 0.89	1.02	0.0	11	8	16	5	F. M. French.	
Ashland.....	Jackson.....	1,940	25	54.4	+ 0.5	79	10	34	30	3.3	+ 0.39	0.64	0.0	12	11	7	13	F. H. Carter.	
Astoria.....	Clatsop.....	11	47															C. W. Lamar.	
Baker City.....	Baker.....	3,466	20	48.6	+ 0.6	76	15	27	8	3.6	- 0.23	0.15	0.3	7	13	10	8	U. S. Weather Bureau.	
Bay City.....	Tillamook.....	14	13	53.4	+ 0.1	76	10	33	26	3.6	- 2.09	0.98	0.0	18	11	6	14	J. O. Bozarth.	
Black Creek.....	Wheeler.....	2,900																F. S. Matteson.	
Black Butte.....	Lane.....	1,200	8	49.8	- 1.6	68	3	34	7	2.9	+ 2.72	1.20	0.0	11	16	7	8	James A. Putman.	
Blackfoot.....	Gilliam.....	237	10	57.0	+ 0.3	81	12	36	30	3.1	+ 0.06	0.20	0.0	5	15	6	10	Geo. W. Long.	
Buckhorn Farm.....	Josephine.....	1,300	10	53.7*	+ 0.4	83*	10	31*	8	4.6*	+ 5.45	2.80	0.0	10	16	0	13	E. F. Meiser.	
Cascade Locks.....	Hood River.....	100	18	53.5	- 0.7	78	10	36	26	2.7	- 1.95	1.12	0.0	11	17	4	10	Val W. Tomkins.	
Cazadero.....	Clackamas.....	514				81	10	34	26	3.9	4.59	0.91	0.0	12	12	0	19	A. Drill.	
Condon.....	Gilliam.....	2,884	1	48.4		74	9	26	30	3.3	1.01	0.37	T.	10	17	1	13	C. H. Williams.	
Corvallis.....	Benton.....	600	7	53.6	+ 1.0	76	10	37	7	3.4	+ 1.66	1.55	0.0	10	18	2	11	Oregon Agric. College.	
Dayville.....	Grant.....	1,500	14	50.8	- 0.6	82	10	21	27	5.2	0.44	- 0.40	0.16	0.0	6	20	8	Dr. J. Campbell-Martin.	
Doraville.....	Columbia.....	600	7	51.2	- 0.7	81	11	33	7	3.3	3.47	- 0.26	0.98	0.0	17	8	6	17	Jos. Hackenberg.
Drain.....	Douglas.....	300	6	55.2	- 0.1	86	10	34	8	4.2	4.74	+ 1.60	1.18	0.0	10	14	4	13	Ira Wimberly.
Echo.....	Umatilla.....	625	5	54.2		81	10	30	17	3.8	0.98	0.24	0.0	7	17	3	11	R. B. Stanfield.	
Ella.....	Morrow.....	830	10	54.4		84	12	30	17	3.6	0.47	- 0.30	0.15	0.0	6	20	5	6	C. F. Troedson.
Eugene.....	Lane.....	449	18	54.3	+ 0.7	78	11	38	15	3.3	3.54	+ 0.68	1.18	0.0	11	12	3	16	A. W. Jackson.
Fairview.....	Coos.....	142	11	50.0	- 4.5	76	23	34	8	4.2	7.77	+ 3.01	1.71	0.0	9	18	0	13	Wm. Bettys.
Fall City.....	Polk.....	355	11															Chas. F. Vick.	
Forest Grove.....	Washington.....	220	19	50.9	- 0.9	81	10	30	17	3.0	3.68	+ 0.16	1.00	0.0	12	0	16	15	Pacific University.
Gardiner.....	Douglas.....	72	19	55.0	+ 0.2	78	24	41	7	3.0	8.49	+ 2.95	1.92	0.0	12	7	13	11	Hon. J. S. Gray.
Glendale.....	do.....	1,441	5	54.6		88	10	34	8	5.0	2.75	+ 0.31	0.90	0.0	8	16	5	10	B. J. Simpson.
Glenora.....	Tillamook.....	575	17	50.8	+ 0.1	75	10	30	15	3.9	7.06	- 2.63	2.10	0.0	13	15	1	15	Mrs. Jennie Recher.
Gold Beach.....	Curry.....	40	6	53.6	- 0.5	80	20	38	24	3.2	11.85	+ 6.00	2.45	0.0	11	14	1	16	C. Dewey.
Granite.....	Grant.....	4,680	4	45.2		77	10	12	17	5.3	1.10	0.30	T.	8	6	14	11	L. M. Ford.	
Grants Pass.....	Josephine.....	956	20	54.0	+ 0.1	83	10	31	7	4.6	3.39	+ 1.32	1.10	0.0	11	15	3	13	John B. Paddock.
Grass Valley.....	Sherman.....	2,381	7	56.4	+ 9.2	75	12	42	29	2.0	0.87	0.24	0.0	7	13	8	10	Agent, O. Ry. & N. Co.	
Greenleaf.....	Lane.....	250	9	53.0		80	10	35	26	3.9	8.65	2.12	0.0	11	12	4	15	Wm. Wheeler.	
Headworks.....	Clackamas.....	719	10	51.6	+ 0.2	75	10	33	26	3.2	5.49	- 0.76	1.06	0.0	7	15	2	14	Portland Water Works.
Heppner.....	Morrow.....	1,950	20	54.4*	+ 3.3	81*	10	30*	17	4.8*	0.95	- 0.16	0.34	0.0	6	20	2	9	Geo. Whiteis.
Hermiston.....	Umatilla.....	450	4	52.2		82	12	26	26	4.4	0.93	0.22	0.0	7	15	14			

TABLE 1.—Climatological data for October, 1909. District No. 12—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.					Sky.				Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.		
Oregon—Cont'd.																				
Siskiyou.	Jackson.	4,115	1	51.1	.....	79	10	27	30	29	4.13	.....	1.67	4.9	12	15	8	8	sw.	Louise F. Bates.
Stafford.	Clackamas.	499	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	J. P. Gage.
The Dalles.	Wasco.	112	34	53.8	+ 1.5	78	10	31	30	32	0.83	- 0.38	0.27	0.0	9	15	3	13	w.	S. L. Brooks.
Toledo.	Lincoln.	50	19	53.8	- 0.9	83	10	33	29†	40	4.95	- 0.37	1.15	0.0	12	19	5	7	nw.	C. B. Crosno.
Umatilla.	Umatilla.	340	19	55.0	+ 3.7	83	10†	30	27	40	0.56	- 0.16	0.17	0.0	7	18	4	9	w.	Mrs. H. T. Duncan.
Vale.	Malheur.	2,450	17	49.8	+ 1.4	83	12†	19	27	52	0.52	- 0.08	0.28	0.0	5	21	9	1	ne.	H. P. Osburn.
Wallace Orchard.	Polk.	170	.....	52.9	.....	79	11	23	26	31	2.96	.....	0.75	0.0	11	10	4	17	.....	Chas. A. Park.
Wallowa.	Wallowa.	2,935	6	45.8	- 2.4	78	10	21	8	48	1.08	- 0.54	0.22	1.2	10	7	6	18	sw.	L. J. Coverstone.
Warm Spring.	Crook.	1,600	7	51.8	- 0.0	82	13	22	30	43	0.62	- 0.03	0.27	0.0	5	18	3	10	nw.	Claude C. Covey.
Weston.	Umatilla.	1,800	19	44.2	- 6.1	77	9	11	17	44	1.65	- 0.33	0.50	0.0	10	3	9	19	se.	M. A. Baker.
Williams.	Josephine.	1,363	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	J. M. John.

\* Precipitation included in that of the next measurement.

\*\* Temperature extremes are from observed readings of the dry-bulb; means are computed from observed readings.

† Also on other dates.

‡ Separate dates of falls not recorded.

§ Data are from standard instruments not supplied by the U. S. Weather Bureau.

|| Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

¶ Estimated by observer.

||| Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.

\*, †, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.



TABLE 2.—Daily precipitation for October, 1909. District No. 12, Columbia Valley.

Stations.	River basins.	Day of month.																															Total.		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
Montana.																																			
Anaconda.	Missoula.				.18		.02	T.												T.	T.	.01										.02	0.23		
Bison Mountain.	do.				.25		.40				.10										.02	.14			.04								.05	0.95	
Columbia Falls.	Flathead.																			.12										.15			.05	0.32	
Como.	Bitter Root.				.10		.18													.05				.03										.06	0.36
Darby.	do.				.65		.14		.06												.06	.03												T.	0.94
Dayton.	Flathead.																																		
East Anaconda.	Missoula.				.22		T.	.05			T.	.06								T.	T.	.07												T.	0.40
Fortine.	Flathead.						.04	.03			T.										.11	.10	.01		.06						.08		.02	0.45	
Hamilton.	Bitter Root.				.18		.20	.05													.05														0.48
Hat Creek.	Missoula.		T.	*	.22	T.	*	.44															T.												0.66
Jocko.	Flathead.																																		
Kalispell.	do.						.03	T.												.14	.03	.10							.08	.04		.01	0.43		
Lost Creek.	Missoula.																																		
Missoula.	do.						.01	.07													.20				.02						.04		T.	0.34	
Ophir.	do.				.17						T.										.50													T.	0.67
Ovando.	do.																																		
Philipsburg.	do.				.20		.20	.09	T.			.06									T.				T.									T.	0.55
Pipestone Pass.	do.	.36			.21		.28	T.			.08										T.	.07	T.												T.
Plains.	Columbia.						T.														T.	T.	T.											T.	
Pleasant Valley.	Kootenai.						.15	.02													.14	.15			.13							.10	.05	0.74	
Polson.	Flathead.						.12													.13	.11													0.46	
St. Ignatius.	do.						.01	.01													.14	.02	T.									.19	T.	0.37	
St. Regis.	Missoula.						.89														.23											.35		1.47	
Saltese.	do.						.50														.30	.35									.15		1.30		
Snowshoe.	Kootenai.						1.85	.08	.15											.06	.72	.81	.26		.55				.06	.47	T.	.26	5.27		
Troy.	do.						.32	.10	.20											T.	.60	.35	.45							.20	.03	T.	2.25		
Upper Lake McDonald.	Flathead.																																		
Woodville.	Missoula.				.28	T.	.04	.22				.13									.12			T.		.02					.04			0.85	
Wyoming.																																			
Afton.	Snake.																																		
Alta.	do.				.15	.35	.08	.06	.12												.08									.03	.80		1.67		
Bedford.	do.	T.			T.	.14	.18		.11												T.	.06								.16	.06		0.76		
Snake River.	do.					.30	.10														.40										.30		1.10		
Nevada.																																			
San Jacinto.	Snake.		T.	T.			T.													T.										T.	T.		T.		
Idaho.																																			
Albion.	Snake.	T.	T.		.21	.32	.02	.09	.14													.21								.25	.15		1.39		
Almo.	do.						T.	1.00	.25																					T.	.25		1.50		
Blackfoot.	do.	T.			.18	.22	T.		T.												T.	.02								.03	T.	.54	T.	0.99	
Blanche.	do.																														.12		.27	0.39	
Bogus Creek.	Payette.																																		
Boise.	Boise.	T.	T.	T.	T.			.19												T.	.10	.07	T.							T.	T.	.24	.13	0.73	
Bonanza.	Salmon.																																		
Bonniers Ferry.	Columbia.							.19													.05	.12	.24		T.	.39				.25	T.	.19	1.43		
Boulder Mine.	Boise.	.17	.05					.36	.27												.70									.09	.49		*2.13		
Buhl.	Snake.																																		
Burke.	Columbia.							.63	.05												.20	.21	.37			.70				T.	.39		.18	2.73	
Caldwell.	Boise.							.34													T.	.02										.10	.16	0.62	
Calla Ranch.	do.																																		
Camas.	Lost River Region.	.50	.03	T.																															
Cambridge.	Snake.		T.	T.	T.			.21																											
Chesterfield.	do.																																		
Clawson.	do.				.12	.03	.23		.10																										
Coeur d'Alene.	Columbia.																																		
Culdesac.	Clearwater.							.58														.22									.17			0.97	
Dent.	do.							.70	T.											T.	.02	.21	.02			.01				.11	.12	.41	1.60		
Driggs.	Snake.				.10	.26		.70	.27												T.	T.								T.	.52		1.15		
Eddie.	Lost River Region.				.36	.18	.12																									T.	T.	0.66	
Emmett.	Payette.							.25													.05										.25		.55		
Forney.	Salmon.						T.	.03	.13	.05											.01	.10									.30		0.62		
Gilbert.	Clearwater.																																		
Glenns Ferry.	Snake.							.05												.07	.06									.04		.06	0.28		
Grand Forks.	Columbia.							.56	.08											.10	.48	.36								.50		.21	2.29		
Grandview.	Snake.																																		
Grimes Pass.	Boise.		T.			.16	.04	.25												.42										.10	.14	.90	2.01		
Guffey.	Snake.		.01	T.		.16	T.	.19																							.08	.14	0.59		
Hailey.	Wood-Malad.		T.		.12	.50	.08	T.													T.										.13		*0.83		
Henry.	Snake.																																		
Hotspring.	do.					.30</																													

TABLE 2.—Daily precipitation for October, 1909. District No. 12—Continued.

Stations.	River basins.	Day of month.																															Total.			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				
Idaho—Cont'd.																																				
Salem	Snake	.01				.23		.03																					.62	.15		1.04				
Salmon	Salmon				.44		.07	.02													.08									.12	.01	T.	0.61			
Salmon River Dam	Snake			T.	.23		.06	.08																						.04	.10		0.50			
Sheep Hill	Boise		.01	.03					.20																								0.74			
Silver City	Owyhee	T.	.22	.25	1 <sup>st</sup>	.35	.38														.32									.22	.28		2.13			
Soldier	Wood-Malad	T.	T.	.05			.25							.10																.15	.35		0.90			
Standrod	Snake			.22	.11		.03	.06														.01								.25	.29		0.97			
Sugar	do				.30																										.22		0.57			
Sunnyside	do	T.	T.	T.	T.	T.	T.	T.													.07									.05			T.			
Tilden	do			.15	.30	.02	T.															.01									.06	.11	0.24			
Twin Falls	do			.30	.02		.16															.06									.05	.10	.04	0.71		
Vernon	do			.22	.01				.09																							T.	.32	T.		
Wallace	Columbia			.01			.55	.01													.11	.19	.33	.01		.13			.04	.33	.04	.36	2.11			
Warfield	Wood-Malad																																	0.64		
Wendell	Snake			T.	.02		.14														T.									.18			0.34			
Washington.																																				
Aberdeen	Coast	.05				.48	.09		.22	.22										.23	.90	1.55	.53	.09	1.76	.01			.48	.01	.42		2.22			
Anacortes	Puget Sound								.20				.10	.29							.15	.01	.23		.94					.31	.35	.14	1.04	5.94		
Baker	do				.13	.56		.51	.39			T.	.33								.18	.45	.22	.06	1.27						.31	.25	T.	.45	3.21	
Beillingham	do		.02		T.	.05	.10		.14			.08	.01	.34	.01		.01				.10	.07	.10	T.	.70	.58			.20	.25	T.		.30	2.75		
Blaine	do			.05	.11	.17		.29	.18	.03				.64			.02				.31	.04	.16		1.06	.03				.30	.18	.07	.21	3.85		
Bremerton	do				.08																.30	.62	.41	.02	.48		.51			.12	.17	.04		2.75		
Cedar River	do				.60									.03	.13						.28	.32	.49		.97					.29	.07		1.04	4.22		
Centralia	Coast	T.			.26	.14														.03	.51	.85	.28		.56	.01			.13	.10	.10	.62	3.59			
Cheney	Spokane				.22				.02	T.		.12									T.	T.	.16	.01	.05	.02					T.		.41	.01	.07	0.81
Chopaka	Okanogan				.06																T.	T.	.16	.01	.05	.02					.13		T.		0.64	
Clearbrook	Puget Sound			.02	.47		.09	.30	.71	.03		.55								.05		.22	.02	.24	1.33	.55				.32	.26	.06	.86	6.08		
Clearwater	Coast			.03	1.30	.06	.65	.76			.05	.23								.03	.88	1.32	.60	.20	2.90		.03		.02	1.00	1.07	.40	.57	12.10		
Clealum	Yakima					.20	.25	.10	.18														.16		.03	.04				.04	.03	.04	.20	1.27		
Colfax	Palouse					.31																.33	.16	.21		.11				.22	.15	.04	.34	1.87		
Colville	Volumbia					.13																.25	.02	.42		.06				.09			.35	1.32		
Conconully	Okanogan				.07	.05																.04	.16			.05				.07	.09	.03	.37	0.93		
Coupeville	Puget Sound																					.05	.51			.08				.31		.11	.16	1.28		
Crescent	Spokane				.06																		.05	.51			.08				.18		.25	.24	1.20	
Davenport	Columbia					.03																.14	.03	.27		.06				.15	.27	.11	.24	2.62		
Dayton	do	T.				.37																.95	.31	.12		.10				.15	.27	.11	.24	2.62		
Detroit	Puget Sound				.11	.04			.04					.05								.51	.53	.77	.03	.80				.15	.15		1.13	4.31		
Dixie	Columbia		.01			.90																.80	.35	.50		.07				.22	1.00	.31	.90	5.06		
Duckabush	Puget Sound						.19				.05										2.88	3.08	1.07	.25	1.29	.02				.47	1.62	.50	.34	11.76		
East Sound	do																																			
Ellensburg	Yakima					.17																		.10												
Ephrata	Columbia																														.20		.11	0.58		
Forks	Coast																																			
Fort Simcoe	Yakima																				.05	.10	.25							.05			.06	0.51		
Goat Lake	Puget Sound					1.20	1.00			.15			.20	.05								.90	.70	.25	.05	.85				.16	.66	.30	1.30	7.77		
Gold Creek	Yakima				.10		.04															.01	.12		.04								.20	0.51		
Goldendale	Columbia			.15		.02																.17	.36										.50	1.43		
Granite Falls	Puget Sound				.48	1.01	T.	.08	.01			.11	.12								.33	.22	.38	.62	1.32	.10				.16	.94	.61	.90	6.41		
Hatton	Columbia		.05		.03																	.04	.02	.16		.01					.10	.06	.05	1.0	0.62	
Huntsville	do				.04	T.	.20															.34	.04	.26		.07				.17	.18	.08	.28	1.62		
Irene Mountain	do				.04	T.	.07							T.								.13	.21		.07					T.	.19		.16	0.87		
Kennewick	do				.11																	.05	.24	.29		.11				.15			.01	0.72		
Kettle Falls	do					.06		.09														.18	.24	.46		.05					.03	.03		.44	1.59	
Kiona	Yakima						.05															.23												.06	0.36	
Kosmos	Columbia				.25	.59	.02	.03						.18								.16	.57	.15	.01	.30	.07			.07	.21		.83	3.44		
La Center	do					.38	.09															.08	1.18	.14		.27				.29	.25	.34	.29	3.3		
La Crosse	Palouse			T.		T.	.09							.38	.05	.17				.02	.08	.15	.17			.12				.14	.09	.11	.34	1.49		
Lake Clealum	Yakima		.03		.06	.18	.54	.31													T.	.06	.10	.02	.06	.10	T.			.04	.06	T.	.43	1.99		
Lake Kachess	do				.08	.36		.13	.21					.03							T.	.24	.11		.20					T.	.16	.15	.74	2.41		
Lake Keechelus	do					.10	.60	.50						.05								.18			.38	.25				.20		.40	.60	3.26		
Lakeside	Columbia				.04	T.																.03	.03	.35		.03				.30	T.	.07	.05	0.26		
Laurel	do				.25																	.29	.46	.32						.31	.11		1.20	2.94		
Lester	Puget Sound				.10	.65		.05						.10								.08	.15	.10		.60				.30	.40		.80	3.33		
Lone Tree	Coast		.04		.44	.09	.02	.24	.04			.62	.05								.04	.64	.68	.85	.20	2.02				.02	.66	.76	.27	.52	7.60	
Longmire Springs	Puget Sound																																			
Lost Creek	Columbia				.10			.06						T.							T.	.03		.22								.10	.40	0.91		
Lucerne	do																																			
Lyle, (Pine Hill)	do	T.		T.		.17	.04															.18	.09	.13		.01										



TABLE 2.—Daily precipitation for October, 1909. District No. 12—Continued.

Stations.	River basins.	Day of month.																															Total.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
Washington—Cont'd.																																		
Stokes Ranch.....	do.																																	
Sullivan Lake.....	Pend Oreille.																																	
Sumner.....	Puget Sound.					.20	.10							.05							.20	.23	.48		.95	.07				.12	.07	T.	1.24	3.71
Sunnyside.....	Yakima.			.24		.09	.05														.04	.14								T.	.10		.08	0.74
Tacoma.....	Puget Sound.	T.				.28				T.				.01	.08					.18	.24	.30	.39		.70					.10	.05	.34	.68	3.35
Tatoosh Island.....	Coast.			T.	.47	.74	.05		1.16	.06				.42	.04		T.			.32	.93	1.02	.10	.68	.29		.34		.05	1.13	.33	.26	.64	9.03
Tieton.....	Yakima.																				.11	.02	.15						.06	T.	.10	.04	0.53	
Touche.....	Columbia.					.05	T.														.07		.74	1.52	.04	.10			.20	.34	.60	1.68	5.37	
Touche Ridge.....	do.			.08																			.26						T.	T.			0.37	
Trinidad.....	do.					.11																												
Twisp.....	do.																																	
Tyee.....	do.						.06			.02											.09	.06	.20		.03				.10	.14		.31	1.01	
Vancouver.....	do.	.01				.27	.07													.18	.17	.56	.18					.12	.10	.12	.65	2.43		
Vashon Island.....	Puget Sound.					.16	.01									.12	T.				.02	.28	.40	.03	.80	.10	T.			.13	.13	T.	.90	3.08
Wahluke.....	Columbia.		.20			.15											T.						.15							T.	.08			0.58
Wallace.....	Okanogan.					T.															.08		.40	T.	.12				.09	.21	.11	.31	1.32	
Walla Walla.....	Columbia.		T.			.07	.11														.63	T.	.13		.03				.27	.09	.01	.21	1.55	
Waterville.....	do.					.07		T.													T.	.10	.25		.04				.30	T.			0.76	
Wenatchee (near).....	do.					.05	T.	.06													T.	.07	.13		.03				.12	T.			.03	0.49
West Branch.....	Spokane.																																	
Wilbur.....	Columbia.						.10														.17	.33			.05				T.			.07	0.72	
Yale.....	do.					.60	.70	.15												.10	.60	1.00	.70		.20				.25	.55	.40	1.30	6.55	
Zindel.....	Snake.																																	30.96
Oregon.																																		
Albee.....	John Day.																																	
Albany.....	Willamette.	.16	T.				.20													1.02	.70	.90	.04	.20	T.				.08	.10	.16	.46	4.02	
Ashland.....	Rogue.	.13		.13		.06	.14														.03	.13	.06	.08						.05	.14	.23	.64	1.82
Astoria.....	Columbia.																																	
Baker City.....	Snake.		.10	T.	.01		.14														.07								.07	T.	.03	.15	0.57	
Bay City.....	Coast.	.02	.09			.11	.50		.08						.09	.02				.09	.79	.98	.40	.09	.26	.02			.19	.88	.54	.65	5.80	
Bear Creek.....	Deschutes.	.04	.05	.04		.15																	.07						.05				0.84	
Beaver Creek.....	do.																																	
Bellfountain.....	Willamette.	.28				.08	.06													.18	.46	1.14	.41	T.					.40	.47	.14	.59	5.21	
Bend.....	Deschutes.		.05	.06		.05	.02														.05	.17	.02						T.			.04	0.46	
Big Basin.....	John Day.						.50																						.30		T.		.51	1.30
Birch Creek.....	do.		.20				.12	T.													.20	T.	.30						.30				.40	1.52
Black Butte.....	Willamette.	.25				.05	T.														.50	.20	.50	.45				.10	.65	.75	.50	.95	5.90	
Blalock.....	Columbia.		.03			T.	.14														T.	T.	.17						T.	.08		.20	0.62	
Blue Mount Sawmill.....	Umatilla.		T.			.41	T.	T.														.64	.11	.18		.14	T.		.16	.41	.18	.86	3.09	
Buckhorn Farm.....	Rogue River.	.30				.02															.46	.70	.48	.96					1.10	1.28	.62	.80	9.72	
Butte Falls.....	do.	.34	.02	.03		.02	.12														T.	.37	.28	.17					.35	.43	.35	1.63	4.11	
Cableville.....	Snake.																																	
California Gulch.....	Umatilla.	.21																					.20	.09	.10		.01		.11	.18		.40	1.20	
Canyon City.....	John Day.		.02	.01		.03															.08	.02							.13	T.	.05	.14	0.48	
Cascade Locks.....	Columbia.					.15	.58	T.													T.	.78	.25	.56	.06		.18		.27	.57	.07	1.12	4.59	
Cascadia.....	Willamette.	.02				.20	.46														.01	.33	.70	.18					.42	.48	.11	1.32	4.23	
Cazadero.....	do.					.15	.42									.04					.04	.91	.47	.24		.25			.15	.60	.04	.85	4.16	
Columbia Mine.....	Snake.		.18	.03	.07		.18															.16	.06	.04					.16	.04	.14	.70	1.72	
Condon.....	John Day.	.02		.02		.05															.20	.01	.16						T.	.07	.10	.01	.37	1.01
Coquille River L. H.....	Coast.	.33				.06	.17	.06													1.40	1.66	0.78						1.45	1.24	0.12	.93	8.20	
Cornucopia.....	Snake.		.13	.02	.04		.47															.24	.12						.39	.04	.09	1.11	2.65	
Corvallis.....	Willamette.					.12	.10														.18	1.55	.87	.33					.60	.29	.16	.38	4.51	
Cracker Creek.....	Snake.	T.	.01	T.	T.	T.	.05		T.													.01							T.	T.			.06	0.13
Crescent.....	Deschutes.																																	
Dayville.....	John Day.		.03			.16															T.	.03		.01					.05			.16	0.44	
Doraville.....	Columbia.	.03				.25	.19	.05	.03												.07	.34	.98	.19	.01	.42		.01	.01	.10	.09	.10	.60	3.47
Drain.....	Umpqua.	.25				.04															.22	1.18	.63	.25					.39	.39	.24	1.16	4.74	
Duncan.....	Umatilla.						.25															.30	.10										1.25	1.90
Echo.....	do.					.07																.24	.06	.12					.21		.14	.14	0.98	
Elkhorn Ranch.....	Coast.	.44				.07	.32																											

## MONTHLY WEATHER REVIEW.

OCTOBER, 1909

TABLE 2.—Daily precipitation for October, 1909. District No. 12—Continued.

Stations.	River basins.	Day of month.																															Total.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Oregon—Cont'd.																																	
Miramonte Farm.	Willamette.	.02				.28	.07													.48	.24	.20	.08	.12	.01	.01	.01	.09	.14	.15	.48	2.35	
Monroe	do.	.26				.13	.05														3.30	.37						.30			.50	4.91	
Mount Angel.	do.																				1.70			.25								1.95	
Mountain Home	Columbia.	.05				.28	.28	.11						.06					.07	.25	.99	.23	.06	.22				.07	.14	.12	.68	3.63	
Mount Hood.	Columbia.					.15	.19												.68	.20	.04							.06	.34	.15	1.19	3.00	
Mountain Park.	do.					.13	.55	.02											.65	.31	.25			.04				.25	.40		1.40	4.00	
Mountain Ranch.	Rogue.	.17				.05	.14												.26	.94	.52	.25						1.36	.25	.84	2.50	7.28	
Musick.	Umpqua.	.42	T.			.14	.35	.01											.11	1.64	.62	.61						.40	.65	.70	.48	6.23	
Newport.	Coast.	.32				.08	.23	.03											.05	1.00	.17	.60	.02				.06	.10	.66	.32	.69	4.33	
Nigger Flat.	Malheur.																																
Oehoco.	Deschutes.	T.	.06	.06			.01													.20	.02	.10						.03	T.		.77	1.25	
Oehoco Creek.	do.		.14			.12	.09	.02											T.	T.	.03	.08						.03	T.		.62	1.16	
Owyhee.	Umatilla.	T.	.03				.18			.63																			T.			.18	0.44
Pendleton.	Umatilla.					.09														.32	.02	.13	T.		T.				.09	.07	.15	.35	1.22
Perist.	Rogue.	.42				.05	.08												.04	1.00	.14	.20						.49	.37	.25	1.92	4.96	
Pilot Rock.	Umatilla.	T.	.01			.07														.05	.04	.05						.07	.06	.24	0.59		
Pompeii.	Willamette.					.28	1.00	.27												.51	.48	.38							171.02	101.80	6.01		
Portland.	do.		T.			.23	T.												.14	.47	.36	.03		.16				T.	.09	.08	.32	.13	2.01
Port Orford.	Coast.																																
Post.	Deschutes.	.05	.10	.05		.16														.29	.20	.10						.10			.39	0.85	
Power House.	Walla Walla.		T.				.10														.02				.05			.15	.07		.42	1.38	
Prineville.	Deschutes.	.07	T.			.07													.04		.02							T.			.36	0.56	
Prospect.	Rogue.	.40				.77	.10												.10	.56	.20	.20						.55	.40	.60	1.00	4.18	
Range.	John Day.		T.			.60	.10												.05	T.	.15										.53	1.45	
Ray Creek.	Columbia.						0.8													.11								.10			.26	0.55	
Reston.	Umpqua.	.22				.02	.03												101.47	.28	.40							1.35	.88	.64	1.50	6.89	
Richland.	Snake.		.04	.03	.03		.09													.06								.02		.02	.15	0.44	
Riverdale Ranch.	Deschutes.																																
Riverside.	Malheur.	T.	.20	.15																.10							T.				.22	0.57	
Rock Creek.	Willamette.					.40														35.2	191.80	.80						.80	.42	.48	.84	8.08	
Roseburg.	Umpqua.	.12				.02	.05							.01					.40	.80	.25	.01					.05	.56	.57	171.06	4.07		
Rosland.	Deschutes.	.02	.01			.10	.08	T.											.01	.13	.08	.11						.05	.04	.01	.91	1.56	
Salem.	Willamette.	.38				T.	.28													.68	.38	.66	.02					.08	.06	.12	.34	3.00	
Seneca.	Interior.	.12																					.15						.10	.25	.62		
Siakiyou.	Rogue.	.25	.09	.12		.06	.01												T.	.54	.31	.67						.26	.33	.42	1.67	4.13	
Sisters.	Deschutes.	.03				.04	.03													.10	.16	.07						.05		.43	.03	0.94	
Skyland.	Willamette.																																
Sparta.	Snake.																																
Stafford.	Willamette.																																
Starkey.	Grande Ronde.																											T.			.10	T.	0.10
Summit.	Willamette.	.34				.19	.17	T.											121.01	.80	.60	.02	.02	T.				.02	.33	.40	.09	.66	4.77
Summit Prairie.	Deschutes.	.05	.10			.12														.10	.08										.60	1.18	
Susanville.	John Day.		T.	.16	.02		.28													.10	.02										.19	.27	1.09
The Dalles.	Snake.		.01			.16	.03																							.48		.06	
Tin Roof Cabin.	Columbia.					.32														.11	.11	.10						.01	.03		.27	0.83	
Toledo.	Umatilla.					.30														.32		.13			.03				.05		.35	1.20	
Trask.	Coast.	.10																.15	.30	.55	.20	.70		.05				.50	.55	.20	1.15	4.95	
Umatilla.	do.																																
Unity.	Columbia.						.03												T.	.12	.17			.01					.14	T.	.04	.05	0.56
Vale.	Snake.		.13	.10	.08	T.	T.													T.	.02								.07			.08	0.48
Van.	Malheur.			.02	.02		.19																								.01	.28	0.52
Wallace Orchard.	do.																																
Wallowa.	Willamette.	.19				.16	.19													.20	.75	.45	.33					.16	.04	.11	.43	2.96	
Walloupa.	Grande Ronde.		.16	.03		T.	.22													.15	.06	.01						.17	.05	.14	.09	1.08	
Wamic.	do.		.01				.33													.12	.03	.05			.01				.17	.04	.13	.27	1.16
Warm Springs.	Deschutes.			.16		.14																							T.			.47	1.08
Wasco.	do.			.05		.15														.10	T.	.05									.27	0.62	
Welches.	Columbia.																																
Wenaha Springs.	Umatilla.					.23	.85	.03												.90	.80	.12		.20					.25	.05	.80	.40	4.43
Weston.	do.					.40														.80											.24	0.30	
Willamina.	Walla Walla.	T.	T.	T.		.25	.02	T.												.30	.20	.10	T.		.03	T.		.13	.07	.05	.50	1.65	
Williams.	Willamette.																																
	Rogue.																																



TABLE 3.—Maximum and minimum temperatures at selected stations for October, 1909. District No. 12, Columbia Valley.

Date.	Montana.				Afton, Wyo.		Idaho.																											
	Kalispell.		Missoula.				Boise.	Bonners Ferry.		Hotspring.		Lewiston.		Mackay.		Meadows.		Pocatello.		Salmon.		Shoshone.		Vernon.		Wallace.								
	Max.	Min.	Max.	Min.	Max.	Min.		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.					
1...	58	33	59	31	.....	.....	60	42	64	33	69	40	66	42	54	22	60	29	61	33	57	24	61	34	60	28	58	32						
2...	60	33	59	35	.....	.....	59	46	68	32	68	49	64	43	62	36	50	37	74	41	60	30	65	45	76	31	64	35						
3...	66	39	70	39	.....	.....	69	44	64	34	69	40	72	51	60	35	70	35	64	45	67	32	61	43	66	43	62	42						
4...	62	37	59	44	.....	.....	68	45	69	32	66	44	74	45	56	37	63	43	64	41	62	48	61	38	62	38	63	35						
5...	64	36	67	38	.....	.....	70	45	71	35	69	42	74	46	57	36	67	35	64	42	59	34	64	40	62	37	66	37						
6...	61	44	57	46	.....	.....	58	45	62	40	60	46	64	50	49	32	55	44	62	38	56	33	56	38	62	31	50	49						
7...	52	32	47	33	.....	.....	51	35	54	29	55	41	58	37	48	33	49	29	48	36	50	36	50	35	51	23	46	37						
8...	52	30	48	25	.....	.....	57	29	46	28	60	30	56	34	41	22	49	18	47	25	45	19	53	25	44	17	50	28						
9...	58	40	63	40	.....	.....	69	40	56	34	70	35	72	47	64	29	61	30	63	32	64	39	65	29	57	26	60	41						
10...	66	46	69	41	.....	.....	72	44	63	37	75	37	74	44	67	38	76	28	68	39	65	29	71	35	65	29	66	41						
11...	57	34	58	43	.....	.....	74	45	65	38	76	38	74	44	66	37	75	30	67	39	66	27	70	35	68	30	62	37						
12...	55	29	65	31	.....	.....	74	42	65	32	75	39	72	44	67	36	73	28	69	39	62	28	71	34	65	30	64	36						
13...	66	39	70	47	.....	.....	74	46	62	30	78	40	75	49	73	36	76	31	72	45	72	27	71	36	59	32	63	46						
14...	63	37	68	40	.....	.....	74	46	68	41	75	37	71	43	68	38	70	28	71	42	71	28	71	35	68	26	58	36						
15...	58	28	65	30	.....	.....	75	44	62	33	77	49	70	38	67	37	73	29	71	37	65	26	71	35	67	31	54	28						
16...	60	36	63	32	.....	.....	70	42	60	25	78	38	68	39	68	33	68	30	73	37	69	25	69	42	68	27	56	35						
17...	56	31	60	27	.....	.....	68	36	56	22	80	39	64	33	60	31	65	23	64	36	60	24	63	30	62	27	54	27						
18...	56	26	57	26	.....	.....	72	40	59	24	79	36	62	37	69	30	67	24	70	33	59	23	71	37	67	27	61	28						
19...	58	34	66	35	.....	.....	65	46	59	25	80	46	62	45	60	34	59	34	64	43	59	29	64	40	61	33	61	37						
20...	53	40	56	40	.....	.....	60	44	56	34	68	44	60	44	51	32	50	35	58	41	58	34	56	34	52	35	52	40						
21...	46	38	49	32	.....	.....	59	42	53	39	68	40	61	41	50	22	55	31	58	34	61	25	58	36	56	24	47	38						
22...	54	37	56	27	.....	.....	67	42	47	39	68	35	64	38	55	24	60	22	59	29	57	21	61	28	56	22	53	32						
23...	57	32	60	28	.....	.....	69	37	56	33	75	40	66	43	55	28	65	24	70	28	56	20	70	36	64	27	65	34						
24...	56	34	60	42	.....	.....	64	38	56	32	76	40	66	40	59	25	62	31	63	39	61	29	60	35	60	30	53	42						
25...	56	26	59	27	.....	.....	67	36	55	37	72	35	62	34	60	26	62	22	66	35	62	18	65	27	60	23	50	30						
26...	54	32	54	27	.....	.....	67	37	56	33	70	36	60	32	62	27	64	21	65	40	59	22	63	28	56	23	49	30						
27...	56	26	59	24	.....	.....	70	37	56	25	77	26	58	30	60	24	66	21	72	31	57	17	70	33	62	24	50	28						
28...	44	28	57	26	.....	.....	68	47	57	28	72	46	57	39	58	29	56	29	69	48	52	17	64	39	66	25	56	32						
29...	51	32	49	37	.....	.....	52	43	56	31	70	40	52	41	51	30	50	35	50	37	57	39	54	34	55	35	43	36						
30...	42	25	44	23	.....	.....	48	33	57	26	56	37	54	39	26	45	29	39	31	51	26	46	33	40	27	42	26	36						
31...	45	28	50	23	.....	.....	52	41	44	29	54	32	50	43	35	15	38	31	41	25	55	24	49	20	38	14	43	30						
Mns	56.2	33.6	58.8	33.5	.....	.....	65.2	41.3	58.7	31.9	70.5	39.3	64.6	41.1	57.6	30.3	61.3	29.5	62.7	36.8	59.8	27.5	62.7	34.5	59.8	8.2	55.5	35.0						

Washington.																												
Date.	Aberdeen.		Blaine.		Colville.		Koramos.		Lakeside.		North Bend.		North Yakima.		Odesa.		Port Crescent.		Seattle.		Sixprong.		Spokane.		Tacoma.		Tatoosh Island.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1...	67	50	62	43	81	30	61	42	62	43	58	52	62	41	62	33	56	46	57	49	66	46	62	39	59	46	.....	.....
2...	66	41	62	37	72	34	70	41	71	48	54	51	70	51	64	33	56	37	63	50	68	54	69	43	62	46	.....	.....
3...	59	45	62	35	75	36	74	39	71	45	52	48	63	48	77	36	53	34	63	46	72	53	67	45	65	42	.....	.....
4...	63	50	62	51	73	34	75	41	75	43	55	51	71	42	75	39	55	49	69	50	74	45	71	40	70	47	.....	.....
5...	60	52	60	54	63	33	60	43	64	49	55	52	66	43	74	32	59	49	61	54	71	46	69	38	62	53	.....	.....
6...	58	45	61	49	78	45	59	43	61	50	55	50	62	48	72	32	55	40	59	46	62	51	60	43	57	50	.....	.....
7...	58	35	56	39	56	27	58	42	59	41	55	46	59	30	75	30	52	35	56	41	60	37	54	35	59	39	.....	.....
8...	53	44	46	38	57	32	49	36	55	40	54	50	59	35	53	26	50	42	55	45	67	37	52	32	57	42	.....	.....
9...	62	50	65	45	58	33	72	46	62	42	64	54	72	37	54	28	60	45	64	55	77	47	65	43	70	55	.....	.....
10...	71	48	61	43	74	35	79	42	72	46	69	55	74	44	58	30	62	44	63	52	76	52	72	40	63	52	.....	.....
11...	77	47	65	41	67	29	83	42	68	46	62	53	75	46	59	30	63	45	73	50	73	41	69	42	74	47	.....	.....
12...	69	52	61	46	67	33	68	46	69	46	57	52	76	41	59	32	53	47	59	52	80	45	69	39	64	50	.....	.....
13...	62	48	61	50	68	38	59	46	71	53	57	52	74	40	63	30	59	39	62	53	73	58	64	50	62	50	.....	.....
14...	65	39	60	32	77	30	66	44	65	40	56	48	64	34	70	28	52	33	60	45	67	42	65	38	58	41	.....	.....
15...	66	37	55	31	60	26	68	36	64	40	57	48	66	36	66	35	56	40	55	46	68	40	62	33	55	43	.....	.....
16...	62	38	57	39	59	30	61	38	63	40	53	47	67	34	65	29	54	32	55	42	68	37	62	39	54	40	.....	.....
17...	52	34	56	29	60	24	68	30	59	35	55	48	62	32														

TABLE 3.—Maximum and minimum temperatures at selected stations for October, 1909. District No. 12—Continued.

Date.	Oregon.																							
	Walla Walla, Wash.		Ashland.		Baker City.		Eugene.		Gold Beach.		Hermiston.		Marshfield.		Portland.		Prineville.		Roseburg.		The Dalles.		Vale.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1.....	63	42	63	49	59	39	62	50	63	31	67	40	65	51	68	52	57	43	67	51	64	47	64	35
2.....	61	49	66	47	50	44	68	49	64	43	66	41	65	52	69	51	59	44	68	52	71	45	59	46
3.....	71	48	62	47	65	40	69	48	60	48	75	44	58	50	71	49	64	43	68	46	71	54	75	41
4.....	74	50	69	44	63	41	67	48	60	47	77	41	63	50	62	49	80	49	71	50	75	48	73	48
5.....	73	50	61	45	69	38	66	48	61	45	74	40	62	46	60	50	64	34	69	45	66	48	75	36
6.....	63	46	55	50	56	37	60	48	60	52	66	48	61	51	62	48	55	35	60	41	61	54	67	50
7.....	57	40	57	39	47	32	58	48	58	41	63	33	61	37	58	46	64	28	61	37	60	42	58	34
8.....	59	38	66	36	54	27	72	50	63	41	68	33	68	37	60	45	75	34	71	36	66	42	63	21
9.....	77	51	76	43	67	35	71	46	72	46	81	39	82	42	74	47	80	37	76	40	75	45	70	27
10.....	80	51	79	49	72	38	77	44	80	48	81	40	79	48	78	54	74	38	83	44	78	47	75	29
11.....	74	47	72	51	73	40	78	50	65	45	77	37	62	47	80	52	76	37	80	47	75	45	78	31
12.....	78	54	75	48	70	41	82	45	63	44	82	38	67	51	63	49	72	34	71	43	76	46	83	33
13.....	73	54	70	45	73	40	73	45	65	41	75	44	68	54	67	53	72	34	74	44	67	54	83	31
14.....	69	47	77	47	71	40	73	40	63	43	69	36	69	49	65	47	72	34	69	44	69	44	77	32
15.....	66	40	76	48	76	40	68	38	54	46	69	30	60	41	70	46	67	31	74	41	68	48	75	30
16.....	68	45	72	46	65	39	68	42	53	46	71	30	55	47	63	42	67	29	70	42	70	39	77	32
17.....	63	36	66	44	59	28	66	39	60	50	65	28	63	40	63	40	64	28	53	44	62	35	70	25
18.....	58	39	65	43	69	39	64	44	60	45	64	34	60	45	59	44	68	27	52	45	62	37	69	28
19.....	65	48	62	46	58	40	64	44	59	52	67	37	63	51	59	51	55	42	58	47	56	44	66	39
20.....	62	48	66	43	56	40	58	48	63	48	62	40	54	50	57	50	55	37	59	47	55	41	67	33
21.....	62	48	63	40	56	33	61	47	60	50	67	41	56	46	59	50	56	39	62	44	62	42	67	33
22.....	61	43	71	40	60	31	67	40	65	50	65	41	70	39	67	51	68	32	65	38	64	43	64	22
23.....	64	44	66	36	68	35	70	42	61	39	68	35	70	40	66	44	68	26	66	38	66	39	68	20
24.....	62	45	67	37	59	37	65	46	65	38	67	36	72	43	60	45	60	30	62	40	62	43	72	28
25.....	64	43	70	38	59	28	62	45	68	44	66	32	67	41	58	45	65	29	55	41	67	42	68	22
26.....	64	41	68	39	60	28	50	42	65	40	66	26	61	40	51	40	68	25	58	43	61	34	66	21
27.....	54	36	59	39	64	34	51	44	62	46	60	26	61	50	49	42	62	23	52	45	55	32	69	19
28.....	53	38	60	45	57	42	58	46	59	47	55	28	53	48	60	44	58	36	59	42	58	40	60	26
29.....	58	41	59	38	47	34	50	42	52	39	60	38	51	43	49	45	50	30	50	40	52	42	56	36
30.....	53	39	52	34	46	30	51	41	59	39	57	32	53	40	53	42	49	16	53	36	53	31	56	33
31.....	55	45	52	43	41	36	55	45	56	48	64	34	54	48	53	45	53	38	54	46	57	42	47	26
Means.....	64.6	44.7	65.6	43.2	60.9	36.3	63.7*	44.9	61.8	45.4	68.2	36.2	63.0	46.0	62.4	46.8	63.9*	33.1*	63.9	43.2	64.5	43.1	68.3	31.4



## WEATHER, FORECASTS, AND WARNINGS FOR THE MONTH.

By Prof. E. B. GARRITT, in charge of Forecast Division.

During the first decade of October the weather was fair and cool over the eastern portion of the United States and light frost occurred at intervals during that period in the Middle Atlantic and New England States.

From the 3d to the 10th a barometric disturbance advanced from Alaska to the Great Lakes where it deepened and remained nearly stationary until the 15th when the center moved eastward over the St. Lawrence Valley and Canadian Maritime Provinces. This disturbance was attended by rain in middle and northern sections of the country from the Pacific to the Atlantic, by gales over the Great Lakes, and on the 14th by severe local storms in Tennessee, northern Alabama, and northern Georgia. It was followed by snow from the upper Mississippi Valley over the Lake region and the interior of New York and New England. The area of high barometer that followed the disturbance carried the frost line over the interior of the east Gulf and South Atlantic States. Reports indicate that the high barometer area extended far to the southward and caused a sweep of cold air over the central states of Mexico that was destructive to crops. It is probable that the action of the tropical storm described as the Key West hurricane contributed to the flow of cold air currents over Mexico.

## THE KEY WEST HURRICANE OF OCTOBER 11, 1909.

One of the general laws of cyclonic movement in the West Indies, announced by the late Father Viñes, implies that hurricane tracks are traced farther and farther to the westward as the season advances.

So ancient is belief in this rule that the ecclesiastic authority, from time immemorial, wisely ordained that priests in Porto Rico should recite in the mass the prayer, 'Ad repellendat tempestates,' during the months of August and September, but not in October, and in Cuba it should be recited in September and October, but not in August. All of which proves that the ecclesiastical authority knew by experience that the cyclones of October were very much to be feared in Cuba, but not those of August, and that in Porto Rico, on the contrary, the hurricanes of August are disastrous, while those of October are rare.—Viñes.

Weather Bureau records verify the general law referred to. They also show that during the principal hurricane months these storms are liable to appear in any part of the region between the tenth and twenty-fifth parallels of latitude and east of the eightieth meridian and to recurve northward in any part of the area that is bounded by the sixty-fifth and ninety-fifth meridians. It is evident, therefore, that averages of tracks can be given but little weight in forecasting the course of individual hurricanes.

The hurricane season of 1909 presented marked departures from the general law of cyclonic movement. The storms of the early portion of the season reached the west coast of the Gulf of Mexico, and as the season advanced the tracks were traced farther and farther to the eastward. Of the six hurricanes that appeared but two recurved to the northward, one over Louisiana in September and the other over extreme western Cuba and Key West in October, and no storms of marked intensity occurred over Porto Rico and the Lesser Antilles. The sixth important storm of the season in tropical waters moved from the western Caribbean Sea over the lower Gulf of Mexico from October 22 to 24.

Indications of a storm development over the south-central Caribbean Sea were noted as early as October 2. The character and the probable course of the storm could not, however, be determined until October 6. Beginning that date and continuing daily until the 9th shipping interests and coast ports were advised regarding its movement and increasing intensity, and vessels bound for western Cuban waters were advised to exercise caution. Attending the presence of the storm over the western Caribbean Sea on October 9 a tidal wave swept from

the Gulf of Mexico over low-lying islands and sea coasts along the Yucatan Peninsula, drowning, it is reported, a large number of persons, mostly fishermen and their families. On the 10th storm warnings were ordered on the southern Florida coast, and at 6 a. m. of the 11th storm warnings were changed to hurricane at Sand Key and Key West, Fla. Following this action, Florida Weather Bureau stations were telegraphed as follows:

Hurricane now central near Key West promises to be destructive to life and property over a large portion of the Florida Peninsula. You are authorized to incur any necessary expense and to adopt every reasonable measure to disseminate warnings to the islands, coast cities, and even the interior of the State.

The pressure distribution at 8 a. m. of the 11th is shown on fig. 1.

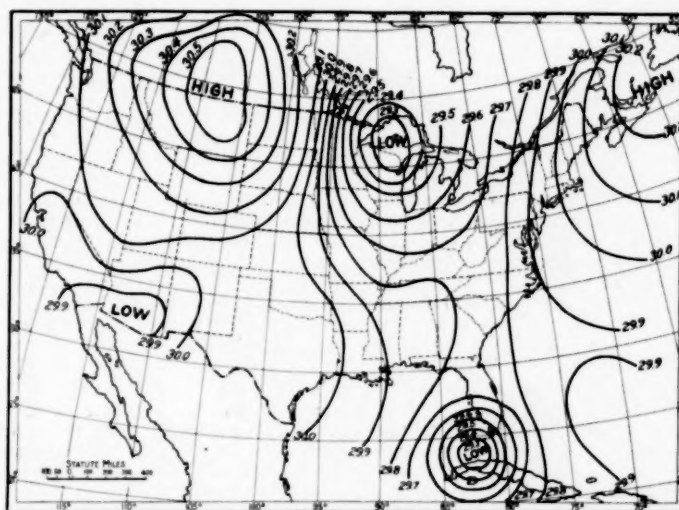


FIG. 1.—Isobars over the United States, 8 a. m., seventy-fifth meridian time, October 11, 1909.

Later in the morning the following special bulletin was telegraphed Atlantic and Gulf Weather Bureau stations and furnished the public press:

The West Indian storm that has been moving westward over the Caribbean Sea during the last week has developed into a hurricane of marked intensity and at 8 a. m. Monday morning was central west of Key West, Fla. At Sand Key the wind was 60 miles from the east. At 10 a. m. the pressure at Key West was 28.94 inches with a wind velocity of 56 miles from the east and a very high sea swell. Storm warnings were ordered Sunday afternoon from Key West to Mobile and changed to hurricane warnings early Monday morning. Hurricane warnings were also ordered on the Atlantic coast as far north as Charleston. The center of the storm will probably move northward over Florida to-night and Tuesday and be felt Tuesday off the entire south Atlantic coast. All shipping in the affected area has been warned to seek refuge immediately. Hourly observations will be taken and all ports kept advised of the direction of the storm.

Advices were issued during the day in which the northeast course of the storm was given and the statement was made that there was apparently no further danger in the Gulf of Mexico. On the following morning the advices stated that the storm had passed northeastward beyond the region of observation.

At 6 a. m. of the 11th the hurricane was central west-southwest of Habana and over or near the western portion of the Province of Pinar del Rio and its advance over that province was preceded and attended by torrential rain and winds of hurricane force. At Habana the storm raged for several hours sinking or stranding small craft in the harbor, prostrating trees, and flooding the streets with water. The following notes by Mr. Dague, Observer Weather Bureau, are descriptive of the action of the storm at Sand Key:

The office was abandoned at 8:30 a. m., and the barograph and supplies were carried to the light-house. At 8:45 a. m. the signal tower fell and the sidewalk was carried away. A little later the outhouses were washed away. When the station was abandoned the barometer had begun to fall rapidly and the wind had reached a velocity of 75 miles an hour. At 9:15 a. m. the anemometer cups were blown away. At this time the wind was estimated at 100 miles an hour with gusts that exceeded that velocity. Heavy rain obliterated objects more than 50 feet distant. At 9:30 all trees had been blown down, the atmosphere appeared like a white mist and water was beginning to cover the island. Five minutes later heavy seas swept over the island. At 10 a. m. the entire island was covered with water to a depth of about 4 feet and all sand was washed from the island. At 10:30 the Weather Bureau building went over and was immediately washed out to sea.

A heavy swell from the southeast prevailed during the storm. The barometer fell rapidly from 4 until 11:30 a. m. when the minimum reading, 28.37 inches, was registered. A rapid rise then set in that continued until 6 p. m. at which time the weather had moderated. Excessively heavy rain fell until 1 p. m., when it began to decrease and ended at 2 p. m. After the wind had backed to the northwest the swell from the southeast opposed it and caused the water to spray from the top of the swells through the air with the wind. Two windows in the top of the light-house were broken during the most violent part of the storm and the openings caused a draught through the tower that made it impossible to open the door at the bottom of the tower.

The following report has been made by the Weather Bureau observer at Key West, Fla.:

From 9 p. m. of the 10th to 6 a. m. of the 11th the barometer fell steadily to 29.52 inches. From 6 to 11:40 a. m. of the 11th the barometer fell to 28.50 inches, the lowest reading ever recorded at this station. At 11:40 a. m. the wind shifted from northeast to northwest and in thirty minutes the barometer rose one-half an inch. At 7 p. m. it had risen to 29.61 inches. The wind increased from 2:30 until 8:50 a. m. and from the latter hour it continued at hurricane force until 1:05 p. m., with maximum velocity 83 miles from the northeast between 10:05 and 10:10 a. m. and an extreme velocity at a rate of 94 miles an hour at 10:07 a. m. From 4 to 11:45 a. m. 8.02 inches of rain fell and between 8:45 and 11 a. m. there was a downpour of 6.13 inches. At 9:30 a. m. the waves had covered the Weather Bureau grounds and considerable spray had fallen in the gage, making it necessary to discard stick measurements.

The estimated storm damage in the city was close to \$1,000,000. About 400 buildings collapsed or were blown down. In the northern section of the city, where the tide rose through the streets and houses, the water and the wind carried frame buildings across lots and many other buildings were lifted by the water. Along the water front 300 boats, large and small, were destroyed. It seems almost miraculous that only one life was lost during the storm.

Ample warnings of the storm were furnished by the Weather Bureau from the 8th to 11th. At 5 p. m. of the 10th northeast storm warnings were hoisted and advices were bulletined and telephoned throughout the city. At 6 a. m. of the 11th hurricane warnings were hoisted and the following was telephoned and bulletined to all local interests and sent to the Florida East Coast Railroad:

"Take every precaution immediately to secure life and property. Hurricane close."

During July, 1909, when a temporary telephone line was built by the Florida East Coast Railroad the official in charge of this office made arrangements with engineers on the extension work to telephone all storm warnings and weather reports. By this means they were in direct communication with the office day and night.

The Key West Citizen of October 12 states:

"Warnings had been issued by the Weather Bureau and the time of the climax was predicted almost exactly by the Official in Charge, who stated it would reach its worst about noon."

Editorially the same paper states on October 16:

"When during the storm most persons abandoned their business the Weather Bureau force stuck to their posts and kept the public informed of the progress of the storm."

After leaving Key West the hurricane swept the Florida Peninsula south of Miami, as shown by fig. 2. On the extension of the Florida East Coast Railroad, about 3,000 workmen were withdrawn from dangerous points. Vice-president J. P. Beckwith, of the road states:

Positively not a life was lost in the storm. Very little damage was done to the right of way or work on the extension. The road will be open to traffic within a few days to Knights Key. Warning by the Weather Bureau enabled us to fully protect all employees and equipment.

Mr. A. J. Mitchell, Weather Bureau Observer at Jacksonville, Fla., reports as follows:

The correctness of the warning and the effectiveness of its distribution are indicated in the small loss of life, about one dozen, along the lines of the projected railroad. Those who were drowned paid the penalty of remaining

aboard a tugboat, which sank, instead of seeking shelter, as others did. With about 3,000 laborers scattered many miles over the low islands of the sea along the proposed route of the Florida East Coast Railroad the fact that the loss of life was so small is an eloquent tribute to the wisdom of the railroad officials in obeying implicitly the information given out by the Weather Bureau. In 1906 many hundreds of laborers were drowned during a tropical storm as a consequence of ignoring warnings. While many tugboats, lighters, and other auxiliary equipment were saved, the losses of the railroad company will reach hundreds of thousands of dollars, and it is conceded by the company and by the public press that hundreds of lives were saved through the warnings issued in connection with the storm of October 11, 1909.

About Miami, Fla., the principal damage was to the citrus fruit crops that were blown from the trees in immense quantities. At Nassau, Bahamas, the storm was felt the night of the 11th when the barometer fell to 29.37 inches and the wind reached a velocity of 50 miles an hour from the southwest. After crossing the northern Bahamas the storm area expanded with a rapid loss of intensity.

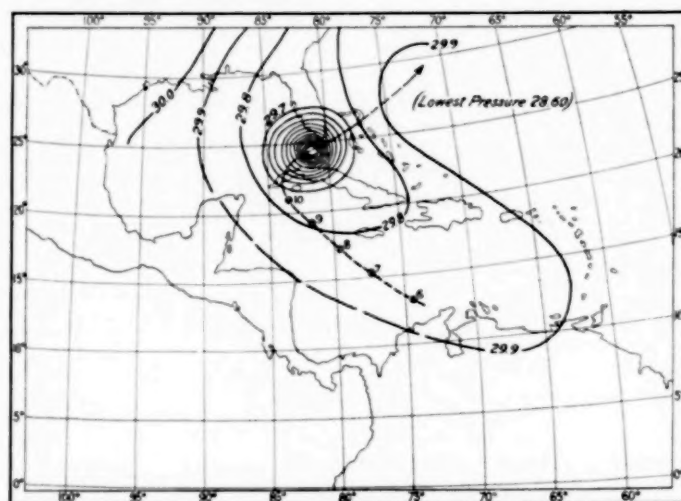


FIG. 2.—Isobars over the United States at noon, seventy-fifth meridian time, October 11, 1909.

While a summary of available information regarding this storm shows that protective measures employed upon the receipt of the warnings reduced losses of life and property to a minimum, it appears certain that many fishermen, spongers, and others in small boats, and dwellers on the low-lying islands or keys that fringe the coast of the southern Florida Peninsula that were outside the zone of communication were lost.

From the 19th to 22d a disturbance moved from the north Pacific coast to the St. Lawrence Valley, with rain on the middle and north Pacific coast and in the middle and northern States east of the Rocky Mountains. Attending the movement of the storm center eastward over the northern Lake region a tornado occurred the afternoon of the 21st about 25 miles south of Erie, Pa. A disturbance that advanced from the middle Rocky Mountain region to the Canadian Maritime Provinces from the 21st to 25th, was followed by a cool wave that caused heavy frost in the east Gulf and South Atlantic States.

From the 22d to 24th a storm passed from the western Caribbean Sea over the lower portion of the Gulf of Mexico attended by excessive and persistent rains that caused destructive floods in the State of Tabasco, Mexico. During the closing days of October a cold wave of unprecedented severity for the season was reported in the valleys near Mexico City.

From the 23d to 27th a disturbance moved from the British Northwest Territory to the St. Lawrence Valley, and on the 28th a disturbance appeared over the British Northwest that at the close of the month extended in a trough of low pressure, from Lake Superior southwestward, with lowest barometer over eastern Kansas.



In the tropical regions of the Pacific Ocean the typhoon season of 1909 has been unusually free from severe storms. On October 24, however, a typhoon that crossed northern Luzon is reported to have been attended by a rainfall of 18 inches in 9 hours and 26 inches in 24 hours and by a wind velocity of 95 miles an hour, that was measured before the wind gage was blown away.

*Average temperatures and departures from the normal.*

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
New England.....	12	49.9	- 0.5	+ 2.1	+ 0.2
Middle Atlantic.....	16	52.8	- 3.0	+ 4.5	+ 0.4
South Atlantic.....	10	61.9	- 1.7	+ 8.2	+ 0.8
Florida Peninsula*.....	8	73.0	- 0.2	+15.7	+ 1.6
East Gulf.....	11	66.0	+ 4.4	+14.8	+ 1.5
West Gulf.....	10	68.3	+ 1.9	+17.3	+ 1.7
Ohio Valley and Tennessee.....	13	54.3	- 2.7	+ 3.1	+ 0.3
Lower Lakes.....	10	47.7	- 3.9	- 3.7	- 0.4
Upper Lakes.....	12	45.6	- 2.0	+ 4.1	+ 0.4
North Dakota*.....	9	42.6	- 0.8	+ 0.2	0.0
Upper Mississippi Valley.....	14	50.8	- 2.0	+ 3.0	+ 0.3
Missouri Valley.....	12	53.4	+ 0.7	+ 8.5	+ 0.8
Northern slope.....	9	46.5	+ 1.8	+ 0.4	0.0
Middle slope.....	6	56.3	+ 0.7	+ 7.9	+ 0.8
Southern slope*.....	7	62.7	+ 0.3	+12.9	+ 1.3
Southern Plateau*.....	10	59.5	+ 0.4	+ 4.5	0.0
Middle Plateau*.....	11	50.1	+ 1.2	+ 4.5	0.0
Northern Plateau*.....	11	48.8	+ 0.8	+ 1.8	- 0.2
North Pacific.....	7	51.7	+ 0.7	- 8.6	- 0.9
Middle Pacific.....	5	59.5	- 0.1	- 2.0	- 0.2
South Pacific.....	4	54.1	+ 1.8	+ 0.2	+ 0.2

\*Regular Weather Bureau and selected cooperative stations.

*Average cloudiness and departures from the normal.*

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England.....	5.3	- 0.1	Missouri Valley.....	4.3	+ 0.2
Middle Atlantic.....	4.2	- 0.6	Northern slope.....	4.6	+ 0.2
South Atlantic.....	2.6	- 1.4	Middle slope.....	3.8	+ 0.4
Florida Peninsula.....	5.7	+ 1.0	Southern slope.....	2.8	- 1.8
East Gulf.....	2.4	- 1.5	Southern Plateau.....	1.3	- 0.9
West Gulf.....	2.4	- 1.3	Middle Plateau.....	3.4	+ 0.1
Ohio Valley and Tennessee.....	3.8	- 0.6	Northern Plateau.....	5.2	+ 0.6
Lower Lakes.....	6.0	+ 0.1	North Pacific.....	6.8	+ 0.5
Upper Lakes.....	6.3	+ 0.3	Middle Pacific.....	5.0	+ 1.2
North Dakota.....	5.5	+ 0.3	South Pacific.....	3.1	0.0
Upper Mississippi Valley.....	4.7	+ 0.1			

*Average relative humidity and departures from the normal.*

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England.....	73	- 6	Missouri Valley.....	64	+ 1 3
Middle Atlantic.....	70	- 9	Northern slope.....	62	+ + 2
South Atlantic.....	72	- 6	Middle slope.....	61	+ + 2
Florida Peninsula.....	77	- 4	Southern slope.....	58	+ 1 5
East Gulf.....	71	- 1	Southern Plateau.....	45	- 0
West Gulf.....	69	- 3	Middle Plateau.....	48	- 1
Ohio Valley and Tennessee.....	69	- 1	Northern Plateau.....	59	- 1 4
Lower Lakes.....	71	- 1	North Pacific.....	56	+ 6
Upper Lakes.....	78	0	Middle Pacific.....	72	+ + 2
North Dakota.....	75	+ 3	South Pacific.....	66	- 4
Upper Mississippi Valley.....	71	0			

*Average precipitation and departures from the normal.*

Districts.	Number of sta- tions.	Average.		Departure.	
		Current month.	Percent- age of normal.	Current month.	Accum- ulated since Jan. 1.
		Inches.		Inches.	Inches.
New England.....	11	1.70	47	- 1.9	- 1.8
Middle Atlantic.....	16	1.44	44	- 1.8	- 1.7
South Atlantic.....	11	1.67	43	- 2.2	- 8.0
Florida Peninsula*.....	8	3.57	76	- 1.1	- 2.5
East Gulf.....	11	2.25	79	- 0.6	+ 6.2
West Gulf.....	10	2.66	96	- 0.1	-11.2
Ohio Valley and Tennessee.....	13	2.52	96	- 0.1	+ 3.0
Lower Lakes.....	10	1.80	60	- 1.2	+ 1.0
Upper Lakes.....	12	1.52	54	- 1.3	- 1.3
North Dakota*.....	9	0.68	68	- 0.3	- 0.1
Upper Mississippi Valley.....	15	2.51	104	+ 0.1	+ 0.7
Missouri Valley.....	12	1.74	94	- 0.1	+ 2.0
Northern slope.....	9	0.37	38	- 0.6	- 0.1
Middle slope.....	6	1.49	100	0.0	- 1.5
Southern slope*.....	7	1.37	49	- 0.7	- 8.6
Southern Plateau*.....	11	0.06	8	- 0.7	- 0.1
Middle Plateau*.....	10	0.54	57	- 0.4	+ 0.4
Northern Plateau*.....	11	0.92	75	- 0.3	0.0
North Pacific.....	7	4.22	102	+ 0.2	- 3.2
Middle Pacific.....	7	1.54	107	+ 0.1	+ 6.9
South Pacific.....	4	0.38	49	- 0.4	+ 4.6

\*Regular Weather Bureau and selected cooperative stations.

*Maximum wind velocities.*

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Amarillo, Tex.....	31	58	w.	Minneapolis, Minn.....	11	51	hw.
Atlanta, Ga.....	14	56	w.	Mount Tamalpais, Cal.....	28	52	hw.
Block Island, R. I.....	16	50	w.	Do.....	29	54	hw.
Do.....	29	50	hw.	North Head, Wash.....	19	62	s.
Buffalo, N. Y.....	12	56	sw.	Do.....	20	62	se.
Do.....	13	50	sw.	Do.....	21	58	se.
Detroit, Mich.....	12	50	sw.	Do.....	22	58	se.
Do.....	21	50	sw.	Do.....	29	56	se.
Duluth, Minn.....	11	56	hw.	Do.....	30	64	se.
Do.....	12	58	hw.	Oklahoma, Okla.....	31	52	sw.
El Paso, Tex.....	23	54	hw.	St. Paul, Minn.....	11	50	hw.
Galveston, Tex.....	31	54	hw.	Sioux City, Iowa.....	7	50	s.
Key West, Fla.....	11	83	ne.	Tatoosh Island, Wash.....	10	50	e.

**RAINFALL IN JAMAICA.**

Through the kindness of Mr. Maxwell Hall, meteorologist to the government of Jamaica and now in charge of the meteorological service of that island, we have received the following data:

*Comparative table of rainfall.*

[Based upon the average stations only.]  
OCTOBER, 1909.

Divisions.	Relative area.	Number of stations.	Rainfall.	
			1909.	Average.
Northeastern division.....	25	17	Inches. 13.13	Inches. 13.89
Northern division.....	22	41	7.88	8.36
West-central division.....	26	20	14.08	13.62
Southern division.....	27	26	12.32	12.14
Means.....	100		11.85	12.00

The rainfall for the Island was therefore the average.

The heaviest rainfall, 31.38, was recorded at Radnor and the smallest, 3.34, was recorded at Sandy Bay.

**RIVERS AND FLOODS.**

River matters were quiet and uneventful during the month, and the usual seasonal low water stages prevailed in all the rivers. There was a moderate rise in the lower portions of the Texas rivers toward the close of the second decade of the month, but it was not sufficient to cause any apprehension.

Hydrographs for typical points on several principal rivers are

shown on Chart I. The stations selected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport on the Red.—H. C. Frankenfield, Professor of Meteorology.

## SPECIAL PAPERS ON GENERAL METEOROLOGY.

## DISCUSSION IN THE MONTHLY WEATHER REVIEW OF THE RELATIONS OF FORESTS TO PRECIPITATION AND RUN-OFF OF WATER.

The following letter has been addressed to the Associated Bureaus of the Government and is also given to the public:

WASHINGTON, D. C., January 25, 1910.

DEAR SIR: Referring to the general topic of the relation of forests to precipitation, the consequent run-off and seepage, and effect upon stream flow, I beg to invite your attention to the importance of securing a thorough and conservative discussion of the numerous phases of this topic. A great deal is likely to be written on these subjects within the next year or two, and I beg to suggest that the MONTHLY WEATHER REVIEW would form a proper medium of public expression on the part of the Associated Bureaus of the Government interested in this line of work. Its pages will, therefore, be open to such carefully considered papers as you may choose to submit, expressing the views of your Bureau. It is desired that mere criticism should not enter into these papers, but the carefully prepared facts and the scientific deductions that arise from them will be welcome.

We may classify the subject approximately in the following way: (a) Meteorology is concerned with the great currents of circulation in the atmosphere which transport the aqueous vapor from the oceans to the continents; (b) Climatology is largely concerned with the effect of the mountains and topography, together with the forest and soil coverings upon the consequent precipitation, temperature, and general climatic effects; (c) Engineering naturally pays more attention to the subsequent transportation of the water, whether falling as rain or snow, from the higher elevations to the channels of flow, either over ground or under ground, until the water finally reaches the sea.

It is evident that these three subjects necessarily overlap one another, and that the data obtained by observers are susceptible to different interpretations from the point of view of the individual writer. The MONTHLY WEATHER REVIEW will be prepared to devote a proper part of its space to the discussion of the leading principles involved, as sustained by the facts obtained by suitable observations, and you are respectfully requested to advise your officials, and others who may be interested, of this proposal on the part of the U. S. Weather Bureau.

Very respectfully,

WILLIS L. MOORE,  
Chief U. S. Weather Bureau.

## RECENT ADDITIONS TO THE WEATHER BUREAU LIBRARY.

C. FITZHUGH TALMAN, Librarian.

The following have been selected from among the titles of books recently received, as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies. Most of them can be lent for a limited time to officials and employees who make application for them. Anonymous publications are indicated by a —.

- Besançon. Observatoire nationale astronomique, chronométrique et météorologique. 22<sup>me</sup> bulletin météorologique. Année 1906. 23<sup>me</sup> bulletin météorologique. Année 1907. Besançon. 1909. v. p. 4°.
- Bröckelmann. —, ed. Wir Luftschiffer. Die Entwicklung der modernen Luftschifftechnik. Berlin. 1909. 433 p. 8°.
- Chatley, Herbert. The force of the wind. London. 1909. viii, 83 p. 12°.
- Davis, Gualterio, G. Clima de la República Argentina. Buenos Aires. 1909. 111 p. 4°.

- Gironde, France (dept.). Commission météorologique. Bulletin . . . 1908. Bordeaux. 1909. 53 p. 8°.
- Great Britain. Departmental committee on humidity and ventilation in cotton-weaving sheds. Report . . . London. 1909. 22 p. f°.
- Greenwich. Royal observatory. Results of the magnetical and meteorological observations . . . 1907. Edinburgh. 1909. lix, (cxxxv) p. f°.
- Hamberg, H. E. . . . Nébulosité et soleil dans le péninsule Scandinave. Uppsala. 1909. 39 p. f°. (Appendice I aux observations météorologiques suédoises. v. 50. 1908.)
- Hann, Julius. Handbuch der Klimatologie. II. Band. Klimatographie. 1. Teil: Klima der Tropenzone. 3. Aufl. Stuttgart. 1910. xii, 426 p. 8°.
- Holland. Koninklijk nederlandsch meteorologisch Instituut. Onweders, optische verschijnselen, enz. in Nederland. 1907. Deel 28. Amsterdam. 1909. 119. 8°.
- Horner, D. W. Observing and forecasting the weather. Meteorology without instruments. 2d ed. London. 1909. 48 p. 12°.
- Marriott, W. Some facts about the weather. 2d ed. London. 1909. 27 p. 8°.
- Mill, Hugh Robert. The rainfall of Bedfordshire and Northamptonshire. [From the "Water supply of Bedfordshire and Northamptonshire." Mem. geological survey, 1908, pages 18 to 28.]
- Prussia. K. preussisches aeronautisches Observatorium bei Lindenberg. Ergebnisse der Arbeiten . . . 1908. 4. Band. Braunschweig. 1909. xxix, 139p. f°.
- Pyrénées-Orientales. Commission météorologique départementale. 36<sup>me</sup> bulletin météorologique annuel . . . 1907. Perpignan. [1909.] 52 p. 4°.
- Scott, A. C. Meteorology and weather forecasting. London. 1909. 40 p.
- Sweden. Statens meteorologiska Centralanstalt. Observations météorologiques suédoises . . . v. 50. 2: ième sér.: v. 36. Uppsala. 1909. x, 157 p. f°.

## RECENT PAPERS BEARING ON METEOROLOGY AND SEISMOLOGY.

C. FITZHUGH TALMAN, Librarian.

The subjoined titles have been selected from the contents of the periodicals and serials recently received in the Library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau. Unsigned articles are indicated by a —.

- Aeronautics. New York. v. 6. February, 1910.
- Custer, L. Luzern. A new principle in the construction of statoscopes. p. 40-42.
- Engineering news. New York. v. 53. Jan. 20, 1910.
- Mannakee, N. H. Barometric and temperature conditions at the time of dust-explosions in Appalachian coal mines. p. 58-61.
- Geographical journal. London. v. 35. January, 1910.
- Owen, Luella Agnes. Floods in the great interior valley of North America. p. 56-59.
- Terrestrial refraction at Alexandria. p. 79. [Abstract of paper by Xydis.]
- The rainfall of New Caledonia. p. 82. [Abstract of paper by Mialaret & Frayssé.]
- London, Edinburgh, and Dublin philosophical magazine. 6 series. v. 19. January, 1910.
- Gold, Ernest. The relation between periodic variations of pressure, temperature, and wind in the atmosphere. p. 26-49.
- Nature. London. v. 82. January, 1910.
- New methods of weather forecasting. p. 271-272. [Review of work by Guilbert.]
- Meyer, Kirstine. Ole Römer and the thermometer. p. 296-298.
- Physical review. Lancaster. v. 30. January, 1910.
- Cline, G. A. On the penetrating radiation at the surface of the earth. p. 35-52.



- Royal society. Proceedings. London. ser. A. v. 83. January, 1910.*  
**Outhbertson, Clive & Outhbertson, Maude.** On the refraction and dispersion of air, oxygen, nitrogen, and hydrogen, and their relations. p. 551-571.
- Science. New York. v. 31. January 7, 1910.*  
**Arctowski, Henryk.** Correlation of climatic changes. p. 25-27.
- Scientific American. New York. v. 102. Jan. 22, 1910.*  
 — The moon and radio-activity. p. 98. [Abstract of paper by Besson.]
- Scottish geographical magazine. Edinburgh. v. 26. January, 1910.*  
**Mort, Frederick.** A note on wind-stars. p. 31-33. [Illustrated.]
- France. Académie des sciences. Comptes rendus. Tome 149. 29 novembre 1909.*  
**Aubel, Edm. van.** Sur la production d'ozone sous l'influence de la lumière ultra-violette. p. 983-985.
- Raybaud, Laurent.** Sur la noctivité du rayonnement solaire. p. 985-986.
- Revue économique internationale. Bruxelles. v. 2. Avril-juin 1908.*  
**Clerget, Pierre.** Le problème de l'eau et le reboisement. p. 378-403.
- Revue néphologique. Mons. Tome 4. Novembre 1909.*  
 — Le téléanémographe Mascarel. p. 371.
- Société astronomique de France. Bulletin. Paris. Mai 1909.*  
**Bergstrand, Oesten.** Influence de la dispersion atmosphérique sur les observations astrophotographiques. p. 220-225.
- Société météorologique de France. Annuaire. Paris. 57 année. Août-septembre 1909.*  
**Martonne, E. de.** Contribution à l'étude du vent d'autan. p. 205-216.
- Besson, Louis.** Sur un actinomètre enregistreur et totaliseur. p. 217-219. [Illustrated.]
- Brunhes, B., & David, P.** Nouvelles observations sur les courants telluriques entre stations à grande différence d'altitude. p. 221-223.
- Nodon, Albert.** L'activité solaire et les phénomènes terrestres. p. 223-225.
- B., C. E.** La prévision des périodes de beau temps. p. 225-226. [Note on the fair weather forecasts of the British meteorological office.]
- Société Ramond. Bulletin. Toulouse. 3 sér. Tome 3. Octobre à décembre 1909.*  
**Marchand, E., & Bouget, J.** L'influence des couches inférieures de nuages sur la distribution des végétaux en altitude dans les Pyrénées centrales françaises. p. 237-243.
- Geographische Zeitschrift. Leipzig. 15. Jahrgang. 1909.*  
**Müller, Rudolf.** Regenverteilung, Pflanzendecke und Besiedlung Oberguineas und des westlichen Sudan. p. 684-701.
- Arlt, Th[eodor].** Paläogeographie und Seismologie. p. 674-684.
- Jahrbuch der Radioaktivität und Elektronik. Leipzig. 5. Band. Dezember 1909.*  
**Constanzo, G., & Negro, C.** Über einige durch Regenwasser hervorgerufene Ionisationserscheinungen. p. 395-402.
- Königlich Preussisches Meteorologisches Institut. Veröffentlichungen. Abhandlungen. Band 3. 1909.*  
**Knoch, K.** Ein Beitrag zur Kenntnis der Temperatur- und Feuchtigkeitsverhältnisse in verschiedener Höhe über dem Erdboden. p. 1-29. (Nr. 2.)
- Hellmann, G.** Magnetische Kartographie in historisch-kritischer Darstellung. p. 1-61. (Nr. 3.)
- Meteorologische Zeitschrift. Braunschweig. Band 26. Dezember 1909.*  
**Gölnitz, O.** Mitteilungen über die magnetische Vermessung des Gebietes des Königreichs Sachsen und deren Ergebnisse. p. 529-538.
- Maurer, J.** Temporäre Schneegrenze und mittlere Schmelzwasserhöhen im schweizerischen Alpengebiet nach neueren Erhebungen. p. 539-546.
- Grossmann, L.** Wilhelm Jakob van Bebbber. Nachruf. p. 546-548.
- Wegener, Kurt.** Die Frage eines Stationsnetzes in der Südsee. p. 548-554.
- Rotch, A. Lawrence.** Die obere Inversion im Osten der Vereinigten Staaten. p. 554-555. [Illustrated.]
- Schmidt, Wilhelm.** Antonio Lo Surdo: Über die nächtliche Ausstrahlung. p. 556-557.
- Gold, Ernest.** Die tägliche Doppelschwankung des Barometers. p. 557-558.
- Alt, E.** Eine neue Gestalt der hypsometrischen Formel. p. 558-562.
- Liznar, [Joseph].** Zur Genauigkeit barometrischer Höhenmessungen. p. 562-564.
- H[ann], J[ulius].** Die Luftströmungen in den verschiedenen Höhen während der Regenzeit im ägyptischen Sudan. p. 565-566.
- Physikalische Zeitschrift. Leipzig. 11. Jahrgang. 1. Januar 1909.*  
**Strong, W. W.** Eine neue Erscheinung am Electroscop und ihre Anwendung auf die Gewitterelektrizität. p. 15-16.
- Wetter. Berlin. 26. Jahrgang. Dezember 1909.*  
**Peppler, W.** Luftdruckstudien. p. 265-273.
- Grossmann, L.** Die Förderung unserer Wettervorhersage. p. 285-286.
- Schultheiss, [Christoph].** Der Wetterdienst in Baden. p. 286-288.
- Wiener Luftschiffer-Zeitung. Wien. 8. Jahrgang. 15. Dezember 1909.*  
**Broichsitter, Heinrich.** Bemerkungen zur Methodik der Luftwiderstandsmessungen. p. 445-448.
- Hemel en dampkring. Den Haag. 7. Jahrgang. December 1909.*  
**Hartmann, Ch. M. A.** De waarschijnlijkheid van regen of zonneschijn op verschillende uren van den dag. p. 113-114.
- M., A. J.** De storm van 13 November en 3 December 1909. p. 114-116.
- Nell, Chr. A. C.** De bepaling van de ontwikkeling der halo's. p. 116-117.

## CONDENSED CLIMATOLOGICAL SUMMARY.

In the following table are given, for the various sections of the Climatological Service of the Weather Bureau, the average temperature and rainfall, the stations reporting the highest and lowest temperatures with dates of occurrence, the stations reporting the greatest and least monthly precipitation, and other data, as indicated by the several headings.

The mean temperatures for each section, the highest and

lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperature and precipitation are based only on records from stations that have ten or more years of observations. Of course the number of such records is smaller than the total number of stations.

Temperature and precipitation by sections, October, 1909.

Section.	Temperature—in degrees Fahrenheit.						Precipitation—in inches and hundredths.							
	Section average.	Departure from the normal.	Monthly extremes.				Section average.	Departure from the normal.	Greatest monthly.		Least monthly.			
			Station.	Highest.	Date.	Station.			Lowest.	Date.	Station.	Amount.	Station.	Amount.
Alabama	63.9	+ 0.0	Evergreen	96	5	3 stations	25	25	1.59	- 0.86	Bridgeport	4.90	Ozark	0.20
Arizona	63.8	+ 0.1	4 stations	100	4 d't's	Flagstaff, (3)	6	31	0.01	- 0.61	Douglas	0.11	59 stations	0.00
Arkansas	63.0	+ 1.1	Bee Branch	98	5	Pond	24	12	2.15	- 0.21	Mount Nebo	4.84	Alicia	0.00
California	69.2	- 0.3	Escondido	104	24	Tamarack	11	29	1.66	- 0.24	Monumental	15.70	20 stations	0.00
Colorado	47.8	+ 1.4	Holly	95	2	Breckenridge	2	9	0.78	- 0.43	Cumbres	2.37	Hartsel	0.01
Florida	71.6	- 0.5	De Funiak Springs	96	5	Mount Pleasant	34	25	1.93	- 2.05	Miami	21.08	6 stations	0.00
Georgia	63.1	- 0.9	Bainbridge	98	5	Clayton	24	25	1.53	- 1.08	Lafayette	4.17	Hawkinsville	0.04
Hawaii	72.3	-	Waianae, Oahu	91	3	Humuula, Hawaii	39	2, 28	4.38	-	Honomanu Valley	13.86	Puuloa, Oahu	6.40
Idaho	47.7	+ 1.2	Stone	87	2	Blackfoot Dam	5	8, 31	1.09	- 0.15	Landore	2.78	2 stations	0.11
Illinois	51.4	- 3.0	Equality	94	3	Lanark	13	28	2.50	- 0.35	Whitehall	5.48	Antioch	0.61
Indiana	50.4	- 4.3	Mount Vernon	90	3	Judyville	19	13	3.72	+ 1.48	Richmond	5.77	Laporte	1.40
Iowa	49.7	- 2.2	Bloomfield	97	2	Washta	10	13	2.22	- 0.13	Cumberland	4.70	Independence	0.48
Kansas	57.1	- 0.0	4 stations	96	3 d't's	Norton	14	12	1.81	- 0.25	Norwich	3.87	Scott	0.53
Kentucky	55.1	- 2.3	Hopkinsville	94	7	Farmers	18	29	2.10	+ 0.01	Louisville	4.06	Alpha	0.95
Louisiana	68.5	+ 1.6	Schriever	98	5	Robeline	31	25	2.09	- 0.54	Grand Cane	4.10	Burrwood	0.10
Maryland and Delaware	52.3	- 3.5	Cambridge, Md	86	8	Laurel, Md	19	30	1.56	- 1.55	Frostburg, Md	4.07	Great Falls, Md	0.51
Michigan	45.3	- 2.9	Gladwin	87	9	Blaney	12	26	1.09	- 1.14	Ironwood	4.66	Reed City	0.37
Minnesota	44.7	- 1.5	4 stations	89	5, 6	Milaca	7	28	1.56	- 0.82	International Falls	5.49	Pipestone	0.40
Mississippi	65.0	+ 0.7	Hattiesburg	96	4, 5	Lake	28	25	1.32	- 0.95	Pascagoula	8.17	Shoccoe	0.00
Missouri	57.2	- 0.4	3 stations	96	3, 4	Louisiana	20	13	2.77	+ 0.42	Louisiana	6.69	Perryville	0.10
Montana	45.2	+ 0.7	Glendive	89	1	Fallon	2	12	0.60	- 0.43	Snowshoe	5.27	5 stations	0.00
Nebraska	51.4	+ 0.2	Beaver City	101	2	Gordon	0	12	1.15	- 0.49	Hooper	4.02	3 stations	0.00
Nevada	50.4	+ 1.2	Logan	91	23	Cobre	7	23	0.61	+ 0.06	Mount Rose Ranch	3.80	3 stations	0.00
New England*	48.6	- 0.5	St. Johnsbury, Vt	92	10	Bloomfield, Vt	13	31	1.60	- 2.16	Jacksonville, Vt	4.85	Chelsea, Vt	0.41
New Jersey	51.2	- 3.3	Flemington	84	9	Charlotteburg	18	20	1.18	- 2.62	Atlantic City	1.82	Elizabeth	0.40
New Mexico	54.1	+ 0.4	Carlsbad	93	16	Elizabethtown	-5	9	0.81	- 0.30	Campana	3.09	6 stations	0.00
New York	46.7	- 3.1	4 stations	85	10	Nehasane	10	30	1.83	- 1.52	Adams Center	5.87	Ballston Lake	0.41
North Carolina	57.0	- 2.7	3 stations	87	4 d't's	Banners Elk	17	25	1.88	- 1.61	Murphy	4.97	Hatteras	0.41
North Dakota	43.1	- 0.9	Forman	97	7	Crosby	0	13	0.64	- 0.28	Power	1.98	2 stations	0.00
Ohio	48.8	- 4.5	Amesville	86	9, 10	Bladensburg	16	29	2.31	+ 0.10	Jacksonburg	5.25	Youngstown	0.62
Oklahoma	62.0	+ 0.1	Hartshorne	99	1	Fairland	24	12	2.19	- 0.20	Dacoma	5.05	Blackburn	0.73
Oregon	52.1	+ 0.3	Hood River	96	9	Weston	11	17	3.23	- 0.41	Happy Home	13.99	Bear Valley	0.06
Pennsylvania	48.4	- 3.5	Irwin	87	10	Lawrenceville	15	30	2.27	- 0.80	Hamburg	4.60	Milford	0.70
Porto Rico	78.9	+ 0.4	Arecibo	100	25	San Salvador	33	15	7.81	- 0.12	Las Marias	16.47	Culebra	3.05
South Carolina	61.2	- 2.0	Florence	96	10	Liberty	27	25	2.43	- 0.55	Edingham	4.74	Aschenboro	0.00
South Dakota	48.1	- 0.3	Armour	95	5	Bowdle	7	13	1.28	- 0.01	La Delle	3.24	Ashcroft	0.95
Tennessee	58.0	- 1.4	Jackson	94	4†	Rugby	16	25	2.21	- 0.41	Benton	4.50	Brownsville	0.00
Texas	68.4	+ 0.9	Fairland	105	14	Nazareth	22	12	2.47	- 0.16	Columbia	16.75	Eagle Pass	0.00
Utah	50.8	+ 2.2	Garrison	91	5	Scipio	6	31	0.42	- 0.56	Silver Lake	2.17	7 stations	0.00
Virginia	53.2	- 3.1	Lincoln	88	8	Burkes Garden	14	29	1.87	- 1.27	Hot Springs	3.56	Columbia	0.74
Washington	50.3	- 0.0	Baker	87	4	Northport	14	17	2.60	+ 0.08	Quinalt	13.78	North Yakima	0.32
West Virginia	50.0	- 4.3	3 stations	88	9, 16	Marlinton	14	29	2.79	+ 0.38	Buckhannon	5.27	Elkhorn	0.60
Wisconsin	45.0	- 3.0	Merrill	86	8	Solon Springs	9	28	1.38	- 1.22	Iron River	4.18	Cecil	0.32
Wyoming	43.7	+ 1.4	Moorecroft	85	2	Eden	4	31	0.41	- 0.48	Sylvan Pass, Y. N. P	1.67	4 stations	0.00

\*Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut.

†Other dates also.



TABLE 1.—Climatological data for U. S. Weather Bureau stations, October, 1909.

Stations.	Elevation of instruments.			Pressure, in inches.		Temperature of the air, in degrees Fahrenheit.										Precipitation, in inches.			Wind.					Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness during daylight, tenths.	Total snowfall.	
	Barometer above sea level, feet.	Thermometers above ground.	Anemometer above ground.	Actual, reduced to mean of 24 hours.	Sea level, reduced to mean of 24 hrs.	Departure from normal.	Mean max. + mean min. + 2.	Departure from normal.	Maximum.	Date.	Mean minimum.	Date.	Greatest daily range.	Mean wet thermometer.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Total.	Departure from normal.	Days with .01, or more.	Total movement, miles.	Prevailing direction.	Maximum velocity.	Direction.						Date.
New England.																													
Eastport.....	76 67 85	29.82	29.90	-.10	49.9	-.05	48.9	+.23	78	9 55	28 31	43	24	45	42	81	1.70	-1.9	9	7,571	w.	36	se.	22	7 10	14	5.3	0.2	
Greenville.....	1,070 6	28.78	29.96		44.2		44.2		77	9 52	18 31	36	39				1.73		11										
Portland, Me.....	103 81 117	29.86	29.98	-.06	49.6	+.05	49.6	+.05	81	9 57	29 31	42	28	44	40	73	1.50	-2.2	10	6,337	w.	34	nw.	25	11 10	16	5.0		
Concord.....	288 70 79	29.68	30.00	-.05	47.5	+.12	47.5	+.12	83	9 58	22 21	37	41				0.82	-2.4	8	3,957	w.	25	nw.	29	9 7	15	5.7		
Burlington.....	404 11 48	29.56	30.00	-.04	46.2	+.07	46.2	+.07	81	10 54	24 30	38	35				1.13	-2.0	8	7,649	s.	38	s.	14	9 6	16	6.3	T.	
Northfield.....	876 16 70	29.06	30.03	-.01	43.2	+.04	43.2	+.04	80	10 53	20 30	33	43	39	36	82	1.11	-1.4	15	5,576	nw.	31	nw.	29	7 7	17	6.7	1.1	
Boston.....	125 115 188	29.87	30.01	-.04	52.8	+.05	52.8	+.05	77	9 60	33 30	45	24	46	40	67	1.07	-2.8	7	7,414	w.	30	w.	17	12 12	7	4.4		
Nantucket.....	12 14 90	29.99	30.00	-.05	53.8	+.07	53.8	+.07	76	10 59	36 30	45	20	49	44	76	1.40	+1.0	11	10,305	w.	46	ne.	15	10 13	8	4.9		
Block Island.....	26 11 46	30.00	30.02	-.03	53.7	+.07	53.7	+.07	75	10 58	34 29	49	16	48	44	72	1.74	-2.4	11	13,269	sw.	50	nw.	29	15 13	13	4.8		
Narragansett.....	9				49.6	+.25	81	10 62	18 30	37 36							2.03		7										
Providence.....	160 141 165	29.85	30.02	-.03	51.2	+.10	80	10 60	29 30	42 29	45 39	70	1 25	-2.6	8	7,169	nw.	40	nw.										
Hartford.....	159 122 140	29.86	30.03	-.03	51.0	+.02	82	10 61	28 21	41 34	44 38	67	1 40	-2.5	8	5,144	nw.	27	sw.										
New Haven.....	106 116 155	29.92	30.03	-.03	51.6	+.12	78	10 60	31 20	43 29	45 39	68	1 76	-2.2	9	6,362	w.	30	nw.										
Mid. Atlantic States.																													
Albany.....	97 102 115	29.94	30.05	-.01	49.5	+.09	79	10 58	28 21	40 31	43 39	75	0 83	-2.2	10	4,983	nw.	28	s.										
Binghamton.....	871 78 90	29.12	30.07	+.01	46.4	+.28	80	9 55	25 30	38 37							1.53	-1.6	13	4,068	w.	26	se.	11	9 5	17	6.5		
New York.....	314 108 350	29.71	30.05	+.01	53.2	+.24	75	8 60	35 30	47 24	46 41	67	0 74	-3.0	8	9,396	w.	46	nw.										
Harrisburg.....	374 94 104	29.70	30.11	+.03	50.8	+.32	79	8 59	36 20	42 38	44 39	72	2 37	-0.6	6	4,754	nw.	28	nw.										
Philadelphia.....	117 116 184	29.97	30.10	+.03	55.0	+.16	78	7 63	36 30	48 31	47 41	65	0 83	-2.3	8	7,054	nw.	28	nw.										
Scranton.....	805 111 119	29.21	30.08	+.01	48.2	+.32	78	9 57	28 30	40 36	42 37	70	1 86	-1.0	9	5,231	sw.	27	se.										
Atlantic City.....	32 37 48	30.04	30.09	+.02	53.2	+.42	76	7 61	30 30	45 26	48 43	71	1 82	-1.5	10	5,622	nw.	29	sw.										
Cape May.....	17 48 52	30.10	30.11	+.04	55.6	+.27	74	7 63	34 30	48 24	49 44	71	1 61	-1.7	9	6,627	nw.	30	sw.										
Baltimore.....	123 100 113	29.97	30.11	+.02	54.8	+.27	80	8 64	35 30	46 37	47 40	63	1 03	-2.0	5	4,940	sw.	30	sw.										
Washington.....	112 62 85	29.99	30.11	+.03	53.2	+.27	80	8 64	31 30	42 42	45 40	70	0 79	-2.3	5	4,469	nw.	27	nw.										
Cape Henry.....	18 9 58	30.09	30.11	+.04	58.4	+.37	79	18 66	41 14	51 32							1.03	-2.8	5	10,265	n.	39	nw.	28	21 4	6	3.8		
Lynchburg.....	681 83 88	29.39	30.14	+.05	53.9	+.30	81	18 67	30 26	41 42	46						1.46	-1.9	6	2,758	nw.	22	nw.	28	15 12	4	4.4		
Mount Weather.....	1,725 10 54	28.26	30.10	+.01	49.2	+.23	72	8 57	29 25	42 26	43 37	70	1 90	-0.5	5	10,466	nw.	44	nw.										
Norfolk.....	91 102 111	30.03	30.13	+.06	58.4	+.29	79	23 67	40 26	50 31	51 45	67	1 43	-2.5	6	6,155	nw.	28	sw.										
Richmond.....	144 145 153	29.99	30.14	+.06	55.4	+.44	79	22 66	33 30	45 35							0.77	-2.6	5	5,931	sw.	37	nw.	23	16 2	3	3.6		
Wytheville.....	2,293 40 47	27.73	30.14	+.05	50.0	+.36	74	9 61	24 29	39 39	43 40	78	3 06	-0.1	4	3,940	w.	27	w.										
S. Atlantic States.																													
Asheville.....	2,255 53 75	27.80	30.18	+.09	52.8	+.25	77	18 66	25 25	40 42	45 41	75	3 28	+0.3	5	4,937	nw.	33	nw.										
Charlotte.....	773 68 76	29.31	30.16	+.08	58.8	+.23	80	10 69	33 25	48 32	50 44	66	1 37	-1.8	5	4,776	sw.	28	sw.										
Hatteras.....	11 12 47	30.11	30.12	+.06	63.1	+.29	79	11 69	49 37	57 25	57 53	74	0 41	-5.6	3	10,631	ne.	45	sw.										
Manteo.....	12 12 46				60.1		78	11 69	35 30	51							0.97	-5.0	2										
Raleigh.....	376 103 110	29.73	30.14	+.07	58.4	+.21	80	23 69	34 29	47 31	49 42	63	1 52	-2.0	5	5,339	ne.	34	nw.										
Wilmington.....	78 81 91	30.06	30.14	+.08	61.2	+.21	79	22 72	38 25	51 29	54 49	73	1 67	-2.1	3	5,213	ne.	38	sw.										
Charleston.....	48 14 92	30.08	30.13	+.07	65.4	+.17	81	11 73	43 25	58 22	60 57	81	2 00	-1.9	7	6,730	e.	28	e.										
Columbia, S. C.....	351 41 57	29.75	30.14	+.07	61.3	+.27	84	4 73	35 25	50 32	52 46	65	3 43	+0.6	7	4,553	ne.	30	sw.										
Augusta.....	180 89 97	29.94	30.13	+.06	61.8	+.18	87	4 74	36 25	50 33	54 49	74	2 73	+0.4	4	3,742	nw.	30	nw.										
Savannah.....	65 81 89	30.07	30.14	+.09	66.4	+.01	83	11 75	40 25	58 26	58 54	74	0 93	-2.6	5	8,278	e.	36	nw.										
Jacksonville.....	43 96 129	30.06	30.11	+.09	70.2	+.06	85	15 79	45 25	62 23	62 59	77	0 08	-5.0	3	6,263	ne.	27	w.										
Florida Peninsula.																													
Jupiter.....	28 10 46	30.00	30.03	+.07	76.6	+.02	87	1 81	64 13	72 17	70 67	74	5 57	-3.9	13	11,764	e.	36	e.										
Key West.....	22 10 53	29.94	29.96	+.02	77.4	-.13	88	1 82	71 25	73 12	73 72	83	16 87	+11.5	18	9,590	ne.	83	ne.										
Sand Key.....	25 41 71																												
Tampa.....	35 79 96	30.03	30.07	+.09	72.6	+.00	87	9 82	46 25	63 31	65 61	75	0 44	-2.5	4	6,339	ne.	26	ne.										
East Gulf States.																													
Atlanta.....	1,174 190 216	28.91	30.15	+.08	61.3	+.11	85	4 71	35 25	52 30	52 46	64	1 63	-0.7	6	7,399	w.	56	w.										
Macon.....	370 78 87	29.74	30.14	+.08	62.2	+.15	88	4 75	34 25	50 34	53 58	79	0 84	-2.3	3	4,143	n.	35	e.										
Thomasville.....	273 8 57	29.82	30.12	+.08	66.9	+.13	92	5 81	36 25	53 37	58 55	79	0 84	-1.6	4	3,508	e.	23	e.										
Pensacola.....	56 79 96	30.06	30.12	+.09	69.8	+.04	91	5 77	46 24	62 23							8.13	+4.0	4	9,583	e.	44	e.	20	25 3	3	2.0		
Anniston.....	741 9 57	29.37	30.17	+.10	61.4	+.10	89	4 76	28 25	47 40							1.48	-0.9	4	4,088	se.	27	w.	14	24 2	5	2.5		
Birmingham.....	700 11 48	29.38	30.15	+.08	64.9	+.05	91	5 76	36 25	53 35	54 49	66	1 47	-0.9	3	4,915	n.	29	nw.										
Mobile.....	57 98 106	30.05	30.11	+.07	69.8	+.27	92	6 80	43 25	60 29	61 56	70	1 60	-1.6	3	4,830	n.	29	n.										
Montgomery.....	223 100 112	29.89	30.14	+.08	65.5	+.02	91	4 78	35 25	53 343																			

TABLE I.—Climatological data for U. S. Weather Bureau stations, October, 1909—Continued.

Stations.	Elevation of instruments.			Pressure, in inches.			Temperature of the air, in degrees Fahrenheit.										Precipitation, in inches.			Wind.					Average cloudiness during daylight, tenths.	Total snowfall.					
	Barometer above sea level, feet.	Thermometers above ground.	Anemometer above ground.	Actual, reduced to mean of 24 hours.	Sea level, reduced to mean of 24 hrs.	Departure from normal.	Mean max. + mean min. + 2	Departure from normal.	Maximum.	Date.	Mean minimum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean wet thermometer.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Total.	Departure from normal.	Days with .01, or more.	Total movement, miles.	Prevailing direction.	Maximum velocity.			Miles per hour.	Direction.	Date.	Clear days.	Partly cloudy days.
Upper Lake Region.																															
Alpena.....	609 13	92		29.36	30.04	+ .01	45.6	- 1.3	73	6 52	22	29	35	35	39	36	82	0.79	- 2.6	10	8,255	sw.	40	sw.	12 10	7	14	6.2	T.		
Escanaba.....	612 40	82		29.35	30.02	+ .01	45.6	- 1.5	69	9 50	29	19	37	26	40	37	79	1.40	- 1.7	11	7,515	s.	36	sw.	14 5	10	16	6.5	0.1		
Grand Haven.....	532 54	92		29.37	30.06	+ .03	46.6	- 3.6	78	9 55	26	29	39	31	42	38	77	1.57	- 0.9	6	10,109	w.	46	sw.	12 8	13	10	5.7	T.		
Grand Rapids.....	707 127	162		29.39	30.08	+ .04	47.2	- 2.9	79	9 56	29	29	39	31	42	37	72	1.14	- 1.4	7	8,258	w.	42	sw.	26 10	6	15	6.2	0.2		
Houghton.....	668 66	74		29.24	29.97	- .03	45.2	- 0.1	85	7 52	27	29	39	35	39	35		2.83	- 0.4	10	5,271	sw.	35	sw.	11 6	8	17	6.9	4.7		
Marquette.....	734 77	116		29.29	30.01	+ .00	45.2	- 0.5	81	8 51	28	27	39	29	40	36	75	1.76	- 1.4	15	8,344	w.	36	sw.	26 5	8	18	6.9	4.0		
Port Huron.....	638 70	120		29.37	30.07	+ .03	45.9	- 3.6	78	9 54	25	29	38	32	41	38	77	1.81	- 0.9	10	8,517	sw.	42	sw.	21 11	6	14	6.0	T.		
Sault Sainte Marie.....	614 40	61		29.32	30.03	+ .02	43.2	- 0.2	74	8 50	22	29	37	31	40	37	85	2.07	- 1.2	13	6,865	sw.	36	sw.	26 3	7	21	7.9	1.0		
Chicago.....	823 140	310		29.19	30.08	+ .04	50.6	- 2.6	76	9 57	29	13	44	24	45	40	71	1.20	- 1.4	5	10,903	w.	46	sw.	12 9	12	10	5.2	T.		
Milwaukee.....	641 122	139		29.33	30.08	+ .05	47.6	- 2.6	73	7 54	28	28	41	26	44	42	87	0.61	- 1.8	7	8,499	w.	32	sw.	20 15	9	7	4.3	0.2		
Green Bay.....	617 49	86		29.35	30.02	+ .00	45.8	- 1.3	80	8 54	26	28	38	31	40	36	75	0.95	- 1.4	6	8,292	w.	44	sw.	12 6	10	15	6.8	2.3		
Duluth.....	1,133 11	47		28.78	30.01	+ .01	42.5	- 2.7	73	6 49	18	28	36	28	38	35	81	2.15	- 0.6	9	9,448	sw.	58	sw.	12 7	9	15	6.6	2.0		
North Dakota.																															
Moorhead.....	949 8	57		29.01	30.04	+ .04	44.4	- 1.6	89	6 54	17	28	35	34	39	36	83	1.61	- 0.5	6	7,522	sw.	32	sw.	7 12	7	12	5.6	0.6		
Bismarck.....	1,674 8	57		28.27	30.09	+ .10	44.0	- 1.0	88	6 56	8	13	32	41	37	32	74	0.78	- 0.2	3	8,052	sw.	35	sw.	24 12	11	8	5.1	1.6		
Devils Lake.....	1,482 11	44		28.42	30.02	+ .03	41.5	- 1.0	87	6 52	9	27	31	34	35	30	72	0.21	- 1.0	7	8,443	sw.	36	sw.	11 9	8	14	5.9	0.6		
Williston.....	1,872 14	56		28.02	30.04	+ .05	41.8	- 1.1	86	4 55	6	13	28	48	35	30	72	0.21	- 0.6	7	6,869	sw.	44	sw.	25 6	17	8	5.3	1.2		
Upper Miss. Valley.																															
Minneapolis.....	918 102	208		29.10	30.02	+ .01	46.8	- 1.1	83	7 54	23	28	39	28	41	37	71	2.05	- 0.5	8	9,783	sw.	51	sw.	11 13	5	13	5.5	T.		
St. Paul.....	837 171	179		29.10	30.02	+ .01	47.0	- 1.1	82	7 54	24	28	40	29	41	37	71	2.60	- 0.3	7	8,574	sw.	50	sw.	11 11	8	12	5.6	0.6		
La Crosse.....	714 11	48		29.25	30.03	+ .01	47.0	- 2.9	79	7 56	18	28	38	30	40	36	73	1.30	- 1.2	7	3,971	s.	20	sw.	11 11	6	14	5.8	1.1		
Madison.....	974 70	78		29.09	30.07	+ .04	46.8	- 2.0	77	8 55	24	28	39	30	40	36	73	0.91	- 1.5	6	7,404	s.	31	sw.	21 9	11	11	5.5	0.1		
Charles City.....	1,015 10	49		28.97	30.06	+ .04	47.0	- 1.2	82	2 57	17	28	37	37	41	38	78	2.48	- 0.4	8	5,588	sw.	26	sw.	11 13	8	10	5.3	T.		
Davenport.....	606 71	79		29.41	30.07	+ .03	50.6	- 2.0	82	2 60	23	13	41	29	43	38	71	2.37	- 0.0	7	5,955	w.	34	sw.	21 18	6	7	3.8	T.		
Des Moines.....	861 84	101		29.13	30.04	+ .01	51.4	- 1.1	89	2 62	20	13	41	39	45	40	70	2.89	- 0.2	7	61,68	sw.	33	sw.	11 13	5	13	5.3	T.		
Dubuque.....	698 100	115		29.32	30.08	+ .04	48.4	- 3.6	79	2 58	23	28	39	32	42	37	72	2.03	- 0.6	8	4,752	s.	24	sw.	11 14	7	10	4.7	0.1		
Keokuk.....	614 64	78		29.40	30.08	+ .03	52.4	- 2.1	88	3 63	23	13	42	35	44	39	70	4.48	- 2.0	16	5,688	sw.	33	sw.	22 14	9	8	4.2	T.		
Calmar.....	356 87	93		29.73	30.12	+ .05	59.5	- 0.4	88	3 70	33	13	42	32	50	45	67	0.74	- 1.9	6	6,166	s.	32	sw.	11 17	10	4	3.1	T.		
La Salle.....	536 56	64		29.52	30.10	+ .06	49.4	- 2.5	82	8 60	24	28	39	36	42	38	73	1.53	- 1.0	7	6,243	w.	36	sw.	21 15	7	9	4.5	T.		
Peoria.....	609 11	45		29.43	30.10	+ .05	49.8	- 2.2	82	8 61	22	13	39	37	42	38	73	3.59	- 1.0	10	5,912	s.	35	sw.	21 15	7	9	4.4	T.		
Springfield, Ill.....	644 10	91		29.39	30.09	+ .04	51.9	- 2.7	86	3 62	26	13	42	33	44	39	69	2.76	- 0.2	10	6,793	w.	30	sw.	22 14	9	8	4.4	T.		
Hannibal.....	534 75	109		29.51	30.09	+ .04	53.4	- 2.5	89	3 64	24	13	43	39	48	42	66	4.48	- 2.8	12	6,768	sw.	33	sw.	8 15	7	9	4.3	T.		
St. Louis.....	567 208	217		29.47	30.08	+ .02	56.2	- 2.2	87	3 66	32	12	47	30	48	42	66	3.40	- 1.0	11	7,474	sw.	40	sw.	11 17	8	6	3.8	T.		
Missouri Valley.																															
Columbia, Mo.....	784 11	84		29.23	30.05	+ .61	55.6	- 0.8	90	2 68	25	13	43	39	48	42	63	4.70	- 2.3	13	6,265	sw.	30	sw.	11 19	5	7	3.2	T.		
Kansas City.....	963 161	181		29.00	30.04	+ .00	57.3	- 1.5	89	2 67	28	12	47	34	48	42	63	0.97	- 1.2	6	8,390	sw.	44	sw.	11 16	7	8	4.0	T.		
Springfield, Mo.....	1,324 98	104		28.67	30.08	+ .03	59.2	- 1.9	90	3 71	27	12	48	32	49	42	64	2.29	- 0.5	8	8,071	sw.	32	sw.	14 20	5	6	3.0	T.		
Iola.....	944 11	50		29.01	30.06	+ .02	58.0	- 1.1	91	1 72	26	12	44	39	48	42	64	1.90	- 0.4	7	5,423	s.	27	sw.	30 17	4	10	4.1	T.		
Topeka.....	983 85	101		28.76	30.04	+ .01	56.6	- 0.5	91	2 68	27	12	45	35	48	42	64	1.35	- 0.6	5	7,541	s.	35	sw.	30 17	6	8	3.6	T.		
Lincoln.....	1,189 11	84		28.76	30.04	+ .01	53.9	- 0.6	91	2 68	21	12	42	39	44	38	64	1.49	- 0.3	7	8,243	s.	42	sw.	11 13	3	15	5.4	T.		
Omaha.....	1,105 115	121		28.85	30.04	+ .01	53.6	- 0.6	89	2 63	26	13	44	32	46	39	66	1.70	- 0.6	6	6,372	sw.	33	sw.	11 14	6	11	4.6	T.		
Valentine.....	2,594 47	54		27.32	30.06	+ .05	49.9	- 0.5	88	5 63	10	12	35	41	39	30	57	0.02	- 1.3	1	8,656	sw.	36	sw.	24 17	12	2	4.5	T.		
Sioux City.....	1,135 96	164		28.82	30.04	+ .02	50.6	- 0.5	87	2 61	17	13	40	37	43	37	67	1.63	- 0.2	6	9,918	sw.	50	sw.	7 13	7	11	5.1	T.		
Pierre.....	1,572 70	75		28.37	30.03	+ .04	50.7	- 1.6	93	5 63	17	13	38	45	40	30	55	0.17	- 0.6	2	8,175	sw.	46	sw.	11 12	12	7	4.7	T.		
Huron.....	1,306 56	67		28.65	30.06	+ .05	56.0	- 2.2	88	5 58	14	13	36	38	40	35	72	2.30	- 1.2	5	9,848	sw.	37	sw.	11 13	8	10	4.8	T.		
Yankton.....	1,233 49	57		28.70	30.03	+ .02	56.0	- 0.5	89	5 61	18	13	39	33	42	36	62	2.22	- 0.6	6	6,729	sw.	39	sw.	7 10	12	9	4.5	T.		
Northern Slope.																															
Havre.....	2,505 11	44		27.36	30.02	+ .04	45.6	- 2.0	77	3 59	16	12	32	47	39	35	74	0.25	- 0.2	5	5,592	e.	36	sw.	31 11	12	8	5.4	0.7		
Miles City.....	2,371 26	48		27.51	30.08	+ .00	49.0	- 2.5	82	4 62	14	12	36	41	41	36	71	0.12	- 0.7	1	3,519	e.	40	sw.	25 14	13	4	4.0	T.		
Helena.....	4,110 8	56		25.83	30.05	+ .02	46.2	- 2.																							



TABLE I.—Climatological data for U. S. Weather Bureau stations, October, 1909—Continued.

Stations.	Elevation of instruments.			Pressure, in inches.			Temperature of the air, in degrees Fahrenheit.										Precipitation, in inches.			Wind.													
	Barometer above sea level, feet.	Thermometers above ground.	Anemometer above ground.	Actual, reduced to mean of 24 hours.	Sea level, reduced to mean of 24 hrs.	Departure from normal.	Mean max. + mean min. + 2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean wet thermometer.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Total.	Departure from normal.	Days with .01, or more.	Total movement, miles.	Prevailing direction.	Maximum velocity.		Date.	Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness during daylight, tenths.	Total snowfall.		
																								Miles per hour.	Direction.								
N.P.Coast Reg.—Con.																																	
Port Crescent.....	259	8	53	29.77	30.06	+ .04	46.6	- 0.8	63	11	53	31	30	40	22	.....	.....	3.08	- 0.4	14	3,578	s.	19	se.	23	2	17	12	6.7				
Seattle.....	123	185	224	29.94	30.07	+ .02	52.2	+ 1.4	73	11	58	40	17	46	23	50	48	2.86	0.0	10	5,542	se.	32	s.	19	1	12	18	7.5				
Tacoma.....	213	113	120	29.82	30.05	+ .01	51.4	+ 0.8	74	11	58	35	17	44	27	49	46	83	3.35	0.0	12	3,661	sw.	26	sw.	6	9	3	19	6.9			
Tatoosh Island.....	86	7	57	29.92	30.01	.....	51.0	+ 1.1	69	10	54	43	30	48	19	48	46	87	9.03	+ 1.0	19	11,140	ne.	50	c.	10	4	6	21	7.6			
Portland, Oreg.....	153	68	106	29.90	30.06	.....	54.6	+ 1.3	80	11	62	40	17	47	28	51	49	84	2.01	- 1.7	10	3,963	nw.	24	sw.	29	8	10	13	5.9			
Roseburg.....	510	9	57	29.51	30.07	- .01	53.6	+ 0.8	83	11	64	36	8	43	39	50	47	80	4.07	+ 1.5	13	1,830	nw.	20	s.	28	9	10	12	6.1			
Mid. Pac. Coast Reg.							59.5	- 0.1										72	1.54	+ 0.1											5.0		
Eureka.....	62	62	80	30.01	30.08	+ .02	53.8	+ 0.7	77	9	60	39	24	48	28	50	48	84	3.78	+ 1.1	12	4,264	se.	30	se.	18	7	8	16	6.4			
Mount Tamalpais.....	2,375	11	18	27.61	30.08	+ .07	57.5	.....	78	13	63	40	29	52	23	51	46	71	2.37	+ 1.1	9	9,591	nw.	54	nw.	29	13	8	10	4.7			
Point Reyes Light.....	490	7	18	29.52	30.04	.....	56.8	.....	85	9	61	48	26	52	24	.....	.....	0.90	.....	7	11,315	nw.	48	nw.	6	11	5	15	6.0				
Red Bluff.....	332	50	56	29.68	30.03	.....	63.2	- 0.6	91	12	74	43	30	52	35	53	44	59	0.82	- 0.8	7	3,602	nw.	24	n.	8	17	9	5	3.7			
Sacramento.....	99	106	117	29.96	30.03	+ .04	61.6	- 0.6	87	12	72	42	30	51	32	54	48	67	1.27	+ 0.2	5	4,522	se.	24	s.	19	15	13	3	3.5			
San Francisco.....	155	200	204	29.90	30.07	+ .06	59.4	+ 1.0	86	9	66	48	26	53	33	54	50	79	1.23	- 0.1	7	4,861	w.	29	w.	6	11	12	8	5.2			
San Jose.....	141	12	110	29.91	30.06	.....	59.3	- 1.0	90	10	72	37	29	46	43	.....	.....	0.72	- 0.2	5	3,495	nw.	24	nw.	28	16	11	4	4.2				
Southeast Farallon.....	30	9	17	30.05	30.08	.....	56.0	.....	81	10	59	50	26	53	25	.....	.....	0.56	- 0.7	9	8,440	nw.	41	n.	6	9	7	15	6.2				
S. Pac. Coast Reg.							64.1	+ 1.8										66	0.38	- 0.4											3.1		
Fresno.....	330	67	70	29.68	30.04	+ .08	64.0	- 0.7	91	10	78	40	31	50	36	54	46	60	0.72	- 0.0	3	2,941	w.	22	nw.	28	20	8	3	2.7			
Los Angeles.....	338	159	191	29.64	30.01	+ .06	66.3	+ 4.0	99	24	77	47	27	56	36	55	48	66	0.28	- 0.5	1	4,246	sw.	19	ne.	23	15	14	2	3.4			
San Diego.....	87	94	102	29.91	30.00	+ .05	63.8	+ 0.8	94	24	71	49	31	57	32	56	51	70	0.00	- 0.5	0	3,955	nw.	20	nw.	22	22	7	2	2.3			
San Luis Obispo.....	201	47	54	29.84	30.06	+ .07	62.4	+ 3.2	97	10	75	40	17	50	50	53	47	68	0.54	- 0.8	4	3,455	nw.	20	nw.	20	13	12	6	4.3			
West Indies.																																	
Grand Turk.....	11	6	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
San Juan.....	82	48	90	29.84	29.92	+ .02	80.4	.....	92	24	86	70	17	75	18	75	73	80	5.60	- 0.6	20	6,818	se.	36	ne.	17	15	12	4	4.5			
Panama.																																	
Christobal.....	17	5	60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
Culebra.....	172	4	30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
Ancon.....	92	6	69	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
Alhajuela.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
Bohio.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
Gatun.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		

† Below sea level.

TABLE II.—Accumulated amounts of precipitation for each 5 minutes, for storms in which the rate of fall equaled or exceeded 0.25 in any 5 minutes, or 0.80 inch in 1 hour, during October, 1909, at all stations furnished with self-registering gages.

Stations.	Date.	Total duration.		Total amount of precipitation.	Excessive rate.		Amount before excessive began.	Depths of precipitation (in inches) during periods of time indicated.													
		From—	To—		Began—	Ended—		5 min.	10 min.	15 min.	20 min.	25 min.	30 min.	35 min.	40 min.	45 min.	50 min.	60 min.	80 min.	100 min.	120 min.
Abilene, Tex.	18			1.36														0.33			
Albany, N. Y.	12			0.26														0.19			
Alpena, Mich.	29-30			0.17														0.11			
Amarillo, Tex.	17-18	6:10 p. m.	2:00 a. m.	0.92	9:37 p. m.	9:55 p. m.	0.12	0.11	0.23	0.39	0.45										
Anniston, Ga.	14	8:28 p. m.	11:10 p. m.	0.60	9:57 p. m.	10:12 p. m.	0.08	0.09	0.37	0.42											
Asheville, N. C.	10-11	9:50 p. m.	D. N.	1.91	1:51 a. m.	2:41 a. m.	0.24	0.07	0.17	0.50	0.73	0.94	1.05	1.11	1.21	1.40	1.50				
Atlanta, Ga.	20-21			0.63														0.33			
Atlantic City, N. J.	15			0.58														0.19			
Augusta, Ga.	14-15	7:21 p. m.	D. N.	0.94	11:49 p. m.	11:59 p. m.	0.16	0.26	0.34												
Baker City, Oreg.	6			0.14														0.11			
Baltimore, Md.	11			0.70														0.44			
Bentonville, Ark.	8			0.79														0.29			
Binghamton, N. Y.	11			0.86														0.51			
Birmingham, Ala.	20	1:30 p. m.	D. N.	1.11	7:56 p. m.	8:16 p. m.	0.34	0.18	0.39	0.48	0.54							*			
Bismarck, N. Dak.	7			0.60																	
Block Island, R. I.	21-22			0.48														0.23			
Boise, Idaho.	31			0.13														0.09			
Boston, Mass.	12			0.17														0.17			
Buffalo, N. Y.	11			1.12														0.23			
Burlington, Vt.	2			0.64														0.21			
Cairo, Ill.	20			0.45														0.17			
Canton, N. Y.	21			0.29														0.14			
Charles City, Iowa	9	9:20 a. m.	2:13 p. m.	0.96	1:18 p. m.	1:38 p. m.	0.43	0.21	0.30	0.38	0.47										
Do.	31	6:10 p. m.	7:10 p. m.	0.60	6:17 p. m.	6:33 p. m.	0.02	0.20	0.42	0.53	0.56										
Charleston, S. C.	6	D. N.	9:15 a. m.	1.22	2:21 a. m.	2:43 a. m.	0.13	0.07	0.22	0.40	0.53	0.59									
Charlotte, N. C.	14			0.63														0.36			
Chattanooga, Tenn.	14	5:55 p. m.	7:42 p. m.	0.89	6:43 p. m.	7:17 p. m.	0.09	0.07	0.14	0.32	0.46	0.63	0.72	0.78				*			
Cheyenne, Wyo.	11			0.19																	
Chicago, Ill.	20			0.52														0.15			
Cincinnati, Ohio	18			0.68														0.26			
Cleveland, Ohio.	10			0.38														0.15			
Columbia, Mo.	17			1.53														0.56			
Columbia, S. C.	5-6	9:20 p. m.	D. N.	0.97	9:22 p. m.	9:42 p. m.	0.01	0.15	0.37	0.50	0.64										
Columbus, Ohio	22-23			0.32														1.17			
Concord, N. H.	21			0.24														0.16			
Concordia, Kans.	9	8:50 a. m.	1:42 p. m.	0.99	9:20 a. m.	9:45 a. m.	0.20	0.05	0.20	0.34	0.40	0.47									
Corpus Christi, Tex.	8			0.26														0.09			
Davenport, Iowa	31			0.77														0.36			
Del Rio, Tex.	18			0.06														0.05			
Denver, Colo.	7			0.13														0.06			
Des Moines, Iowa.	22			1.03														0.52			
Detroit, Mich.	21			0.40														0.30			
Devils Lake, N. Dak.	7			0.13														0.07			
Dodge City, Kans.	8			0.32														0.14			
Dubuque, Iowa	31			0.81														0.32			
Duluth, Minn.	10			1.29														0.42			
Durango, Colo.	3-4			0.21														*			
Eastport, Me.	15			0.78														0.22			
Elkins, W. Va.	23			1.79														0.43			
El Paso, Tex.	1			0.02														0.02			
Erie, Pa.	21			0.34														0.18			

TABLE II.—Accumulated amounts of precipitation for each 5 minutes, etc.—Continued.

Stations.	Date.	Total duration.		Total amount of precipitation.	Excessive rate.		Amount before excessive began.	Depths of precipitation (in inches) during periods of time indicated.													
		From—	To—		Began—	Ended—		5 min.	10 min.	15 min.	20 min.	25 min.	30 min.	35 min.	40 min.	45 min.	50 min.	60 min.	80 min.	100 min.	120 min.
Escanaba, Mich.	31			0.37														0.27			
Eureka, Cal.	29			0.49														0.32			
Evansville, Ind.	10			0.49														0.36			
Flagstaff, Ariz.	16			T.														T.			
Fort Smith, Ark.	8	3:11 p.m.	11:30 p.m.	1.80	5:40 p.m.	6:21 p.m.	0.10	0.14	0.22	0.40	0.67	0.79	0.89	0.93	1.02	1.05					
Fort Worth, Tex.	8	12:58 p.m.	7:25 p.m.	1.21	1:33 p.m.	1:46 p.m.	0.01	0.18	0.36	0.44											
Fresno, Cal.	1			0.41														0.12			
Galveston, Tex.	31			5.75														*			
Grand Haven, Mich.	10			0.75														0.34			
Grand Junction, Colo.	30			0.02														*			
Grand Rapids, Mich.	10			0.64														0.32			
Green Bay, Wis.	20-21			0.38														*			
Hannibal, Mo.	17			2.53														0.47			
Harrisburg, Pa.	11	5:30 p.m.	8:40 p.m.	1.11	6:26 p.m.	7:16 p.m.	0.04	0.06	0.13	0.20	0.25	0.27	0.32	0.42	0.56	0.78	0.91				
Hartford, Conn.	12			0.71														0.33			
Hatteras, N. C.	24			0.23														0.13			
Havre, Mont.	20			0.13														0.12			
Helena, Mont.	4			0.14														0.10			
Houghton, Mich.	20			0.30														0.18			
Huron, S. Dak.	7-8			1.04														*			
Independence, Cal.																					
Indianapolis, Ind.	22			0.66														0.32			
Iola, Kans.	8			0.74														0.39			
Jacksonville, Fla.	9			0.06														0.06			
Jupiter, Fla.	10-11	3:35 p.m.	5:30 p.m.	2.10	3:49 p.m.	4:27 p.m.	0.06	0.10	0.15	0.27	0.42	0.53	0.60	0.66	0.71						
Do.	28	1:05 p.m.	3:35 p.m.	2.38	1:11 p.m.	1:56 p.m.	0.01	0.42	0.82	1.19	1.39	1.69	1.79	2.00	2.10	2.16					
Key West, Fla.	9	1:24 p.m.	3:30 p.m.	0.67	1:37 p.m.	1:52 p.m.	0.02	0.25	0.43	0.52											
Do.	9-11	9:15 p.m.	3:25 p.m.	12.22	7:51 p.m.	8:49 p.m.	2.27	0.10	0.15	0.22	0.27	0.31	0.38	0.52	0.54	0.61	0.74				
Do.	11				8:46 a.m.	9:36 a.m.	5.88	0.07	0.19	0.36	0.46	0.55	0.81	1.09	1.32	1.56	1.74				
					9:36 a.m.	10:26 a.m.		1.98	2.28	2.57	2.83	3.17	3.52	3.82	4.13	4.32	4.52				
					10:26 a.m.	11:16 a.m.		4.68	4.83	5.00	5.12	5.32	5.39	5.47	5.51	5.57	5.62				
					11:16 a.m.	11:40 a.m.		5.69	5.83	5.94	6.06	6.10									
Kalispell, Mont.	19			0.14														0.12			
Kansas City, Mo.	31			0.36														0.19			
Keokuk, Iowa	31			1.45														*			
Knoxville, Tenn.	14			0.86														0.33			
La Crosse, Wis.	31			0.38														0.21			
Lander, Wyo.	7			0.31														*			
La Salle, Ill.	22			0.77														0.18			
Lewiston, Idaho	28			0.17														0.13			
Lexington, Ky.	10			1.13														0.37			
Lincoln, Nebr.	31	5:30 p.m.	11:45 p.m.	1.07	8:10 p.m.	8:34 p.m.	0.33	0.08	0.14	0.24	0.34	0.47									
Little Rock, Ark.	8-9			0.30														0.20			
Los Angeles, Cal.	2			0.28														0.12			
Louisville, Ky.	10	5:15 a.m.	2:15 p.m.	1.69	11:39 a.m.	11:59 a.m.	0.73	0.10	0.23	0.34	0.43										
Lynchburg, Va.	11			1.02														0.42			
Macon, Ga.	23	3:52 p.m.	5:15 p.m.	0.46	3:52 p.m.	4:04 p.m.	0.00	0.26	0.38	0.44											
Madison, Wis.	31			0.44														0.27			
Marquette, Mich.	27-28			0.36														*			
Memphis, Tenn.	31			0.26														0.24			
Meridian, Miss.	20	6:20 a.m.	11:20 a.m.	1.55	9:04 a.m.	9:24 a.m.	0.68	0.67	0.18	0.31	0.42										
		7:15 a.m.	8:27 p.m.	0.79	7:27 p.m.	8:20 p.m.	0.02	0.07	0.13	0.28	0.41	0.45	0.48	0.51	0.58	0.61	0.71				
Milwaukee, Wis.	10			0.23														0.77			
Minneapolis, Minn.	10			1.40														0.09			
Mobile, Ala.	20			1.37														0.49			
Modena, Utah	2			0.06														0.36			
Montgomery, Ala.	15	D. N.	D. N.	0.35	1:14 a.m.	1:22 a.m.	0.01	0.22	0.33									0.05			
Moorhead, Minn.	10			0.69														0.20			
Mt. Tamalpais, Cal.	2			0.34														0.29			
Mt. Weather, Va.	11	10:05 a.m.	7:10 p.m.	1.31	4:57 p.m.	5:12 p.m.	0.63	0.15	0.27	0.46											
Nantucket, Mass.	22			1.14														0.46			
Nashville, Tenn.	14			0.46														0.20			
New Haven, Conn.	11-12	11:35 p.m.	7:05 a.m.	1.04	4:12 a.m.	4:22 a.m.	0.35	0.18	0.32												
New Orleans, La.	9-10	10:30 p.m.	D. N.	0.84	11:38 p.m.	12:06 a.m.	0.08	0.21	0.32	0.35	0.45	0.61	0.67								
Do.	19	12:55 p.m.	8:45 p.m.	2.21	12:53 p.m.	1:26 p.m.	0.06	0.08	0.19	0.44	0.65	0.90	1.18	1.26							
New York, N. Y.	23			0.31														0.14			
Norfolk, Va.	11-12	9:40 p.m.	D. N.	0.53	9:43 p.m.	9:53 p.m.	T.	0.12	0.30												
Northfield, Vt.	12			0.49														0.20			
North Head, Wash.	20			0.89														0.21			
North Platte, Nebr.	8			0.19														0.07			
Oklahoma, Okla.	19			1.07														0.20			
Omaha, Nebr.	31			1.38														0.54			
Oswego, N. Y.	21			0.28														0.16			
Palestine, Tex.	8			1.82														0.45			
Parkersburg, W. Va.	23			0.83														0.27			
Pensacola, Fla.	10	10:35 a.m.	12:45 p.m.	1.67	11:21 a.m.	12:21 p.m.	0.08	0.10	0.31	0.49	0.75	0.95	1.10	1.20	1.27	1.32	1.36	1.50			
Do.	20	11:45 a.m.	9:50 p.m.	5.46	6:42 p.m.	8:25 p.m.	0.57</														



TABLE II.—Accumulated amounts of precipitation for each 5 minutes, etc.—Continued.

Stations.	Date.	Total duration.		Total amount of precipitation.	Excessive rate.		Amount before excessive began.	Depths of precipitation (in inches) during periods of time indicated.													
		From—	To—		Began—	Ended—		5 min.	10 min.	15 min.	20 min.	25 min.	30 min.	35 min.	40 min.	45 min.	50 min.	60 min.	80 min.	100 min.	120 min.
Sand Key, Fla.	10			0.65														0.26			
Sandusky, Ohio.	2			0.34														0.20			
San Francisco, Cal.	2			0.36														0.33			
San Jose, Cal.	2			0.33														0.15			
San Luis Obispo, Cal.	1			0.44														0.18			
Santa Fe, N. Mex.	6			0.72†														*			
Sault Sainte Marie, Mich.	14-15			0.34	4:23 p. m.	4:33 p. m.	0.01	0.17	0.39												
Savannah, Ga.	10	4:23 p. m.	5:05 p. m.	1.04	19:22 p. m.	19:34 p. m.	0.39	0.09	0.39	0.35											
Seranton, Pa.	11-12	6:19 p. m.	D. N.	1.23														0.31			
Seattle, Wash.	23			0.04														0.09			
Sheridan, Wyo.	7			1.08	9:07 p. m.	9:16 p. m.	0.05	0.32	0.43									*			
Shreveport, La.	8-9	6:55 p. m.	D. N.	0.63														0.16			
Sioux City, Iowa	22			0.17														0.12			
Southeast Farallon, Cal.	29			6.17														0.30			
Spokane, Wash.	21			1.59														*			
Springfield, Ill.	17			1.43														0.25			
Springfield, Mo.	8-9			0.59														0.15			
Syracuse, N. Y.	11			0.70														0.09			
Tacoma, Wash.	23			0.13														0.51			
Tampa, Fla.	28			1.16														1.05	1.24		
Tatoosh Island, Wash.	8			2.38	8:50 p. m.	10:00 p. m.	0.41	0.05	0.13	0.31	0.41	0.48	0.56	0.66	0.77	0.89	0.96				
Taylor, Tex.	18-19	5:30 p. m.	D. N.	0.59														0.24			
Thomasville, Ga.	21			0.23														0.23			
Toledo, Ohio	21			0.18														0.09			
Tonopah, Nev.	2			0.35														0.35			
Topeka, Kans.	31			0.02														0.02			
Valentine, Nebr.	7			1.82	4:39 p. m.	5:28 a. m.	0.22	0.03	0.19	0.34	0.46	0.52	0.56	0.69	0.64	0.70	0.84	0.99			
Vicksburg, Miss.	9	D. N.	9:49 a. m.	0.63														0.30			
Walla Walla, Wash.	19			0.38														0.24			
Washington, D. C.	11			0.87	7:39 p. m.	7:56 p. m.	0.02	0.14	0.36	0.66	0.71							*			
Wichita, Kans.	17-18	7:23 p. m.	D. N.	0.09																	
Williston, N. Dak.	16-17			0.69	12:19 a. m.	12:19 a. m.	T.	0.25	0.38									0.24			
Wilmington, N. C.	24	12:19 a. m.	D. N.	0.37														0.58			
Winnemucca, Nev.	3			2.28														0.34			
Wytheville, Va.	11			0.86														*			
Yankton, S. Dak.	8			0.11																	
Yellowstone Park, Wyo.	7																				

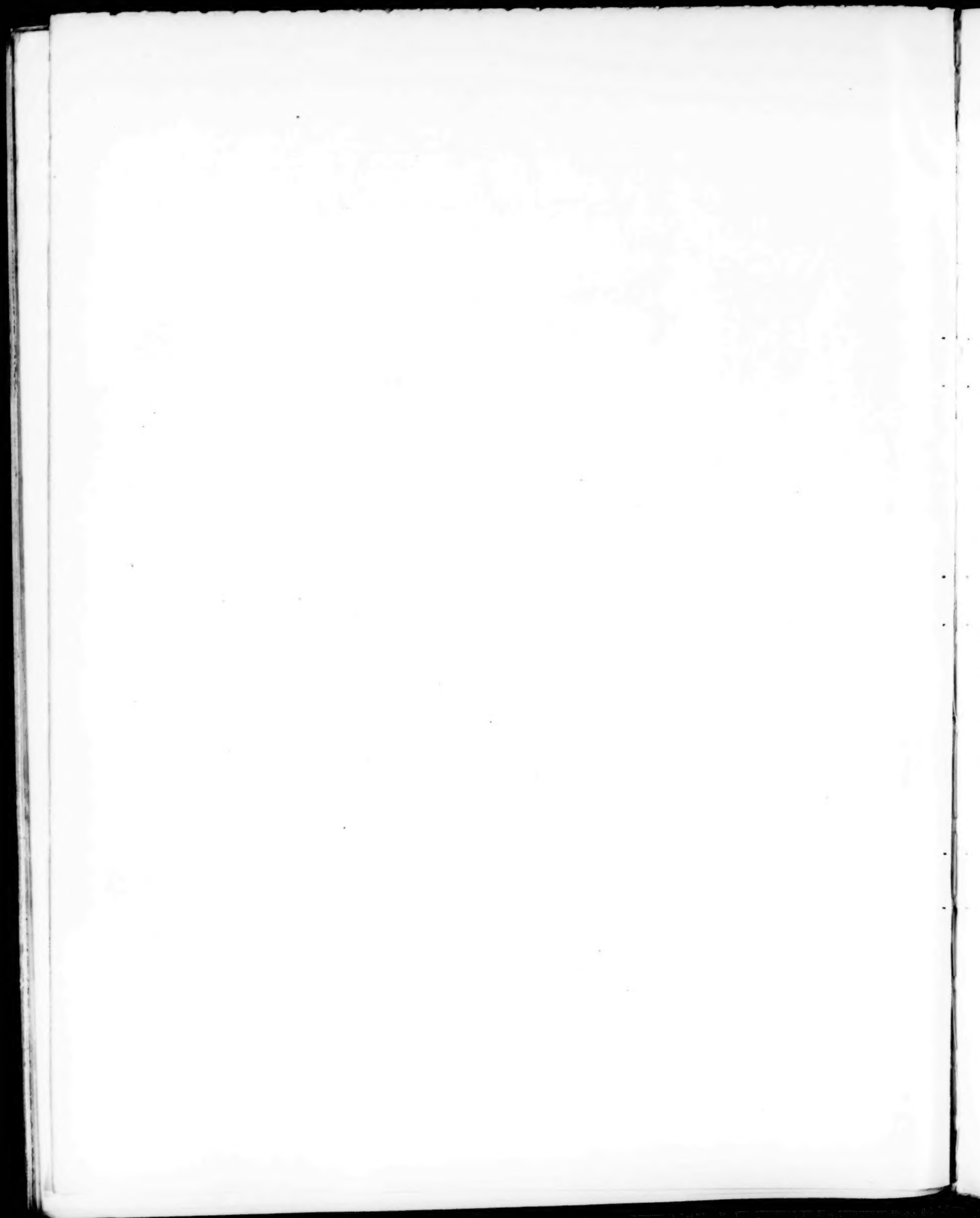
\* Self-register not working.

† Estimated.

‡ No precipitation recorded during month.

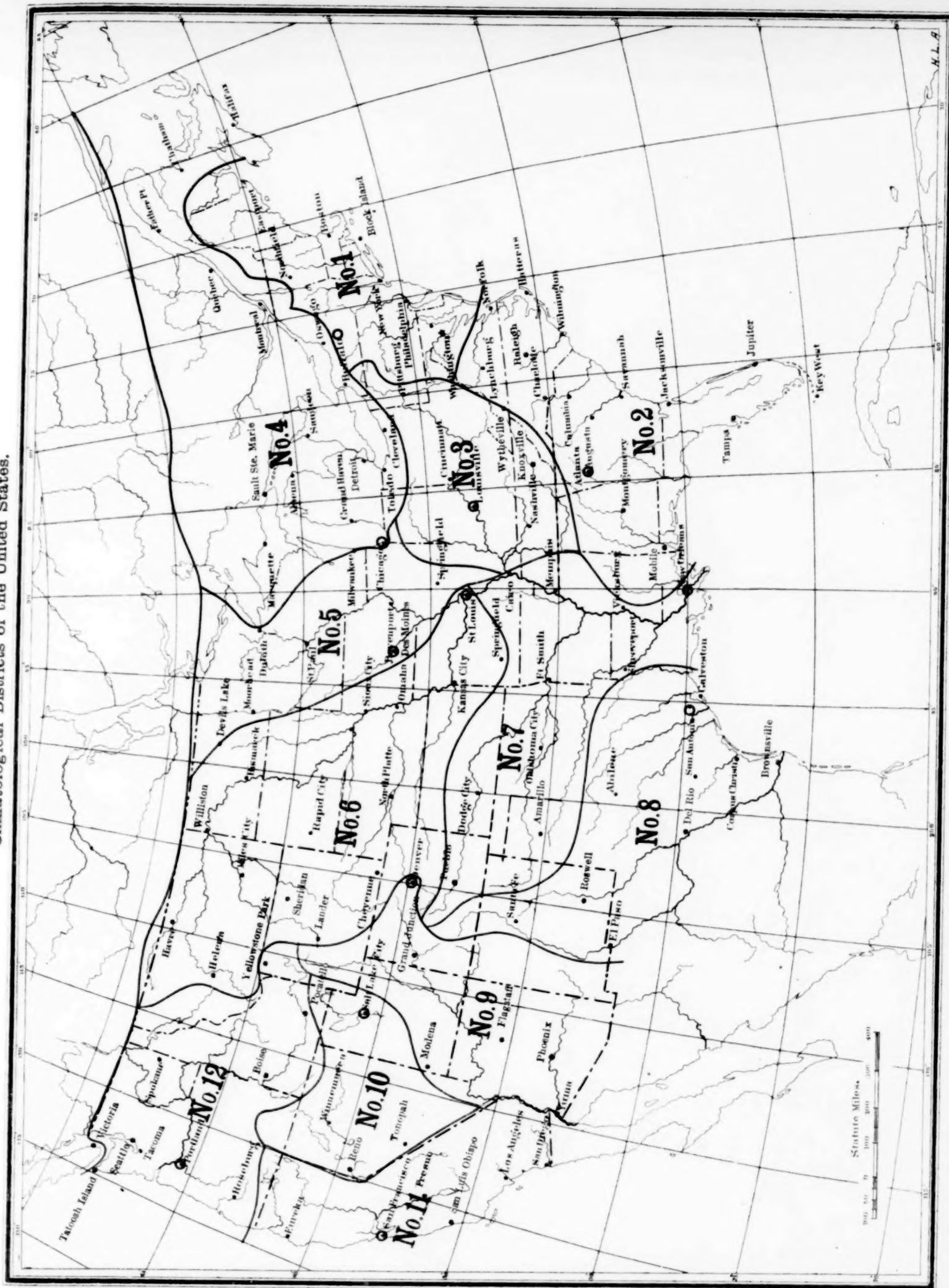
TABLE III.—Data furnished by the Canadian Meteorological Service, October, 1909.

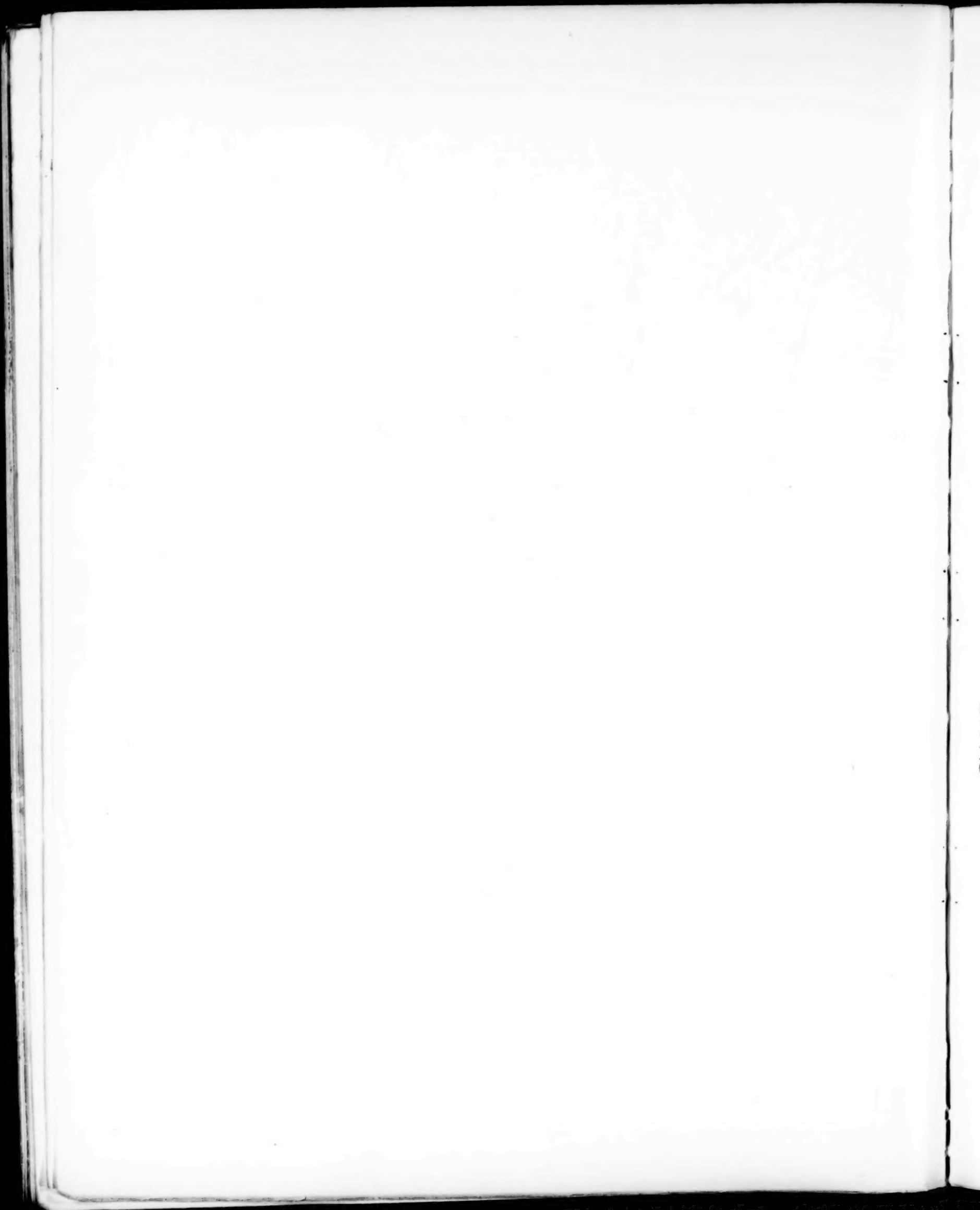
Stations.	Pressure.			Temperature.				Precipitation.			Stations.	Pressure.			Temperature.				Precipitation.		
	Actual, reduced to mean of 24 hours.	Sea level, reduced to mean of 24 hours.	Departure from normal.	Mean.	Departure from normal.	Mean maximum.	Mean minimum.	Total.	Departure from normal.	Total snowfall.		Actual, reduced to mean of 24 hours.	Sea level, reduced to mean of 24 hours.	Departure from normal.	Mean.	Departure from normal.	Mean maximum.	Mean minimum.	Total.	Departure from normal.	Total snowfall.
St. Johns, N. F.....	29.69	29.83	-.09	50.0	+ 4.6	55.7	44.3	4.75	+0.60	.....	Parry Sound, Ont.....	29.33	30.03	+.02	42.8	- 1.1	51.5	34.1	4.45	+0.53	T.
Sydney, C. B. I.....	29.82	29.86	-.10	51.5	+ 5.0	58.6	44.4	6.82	+2.13	.....	Port Arthur, Ont.....	25.26	29.97	-.01	40.9	+ 1.0	47.9	34.0	1.49	-1.07	.....
Halifax, N. S.....	29.79	29.90	-.10	50.3	+ 3.1	57.7	42.0	7.45	+1.90	0.1	Winnipeg, Man.....	29.16	30.01	+.03	42.5	+ 3.4	52.4	32.7	0.52	-1.18	1.4
Grand Manan, N. B.....	29.86	29.91	-.09	50.4	+ 3.5	56.5	44.3	3.85	-0.86	T.	Minneapolis, Man.....	28.18	30.03	+.06	39.4	+ 1.6	49.8	28.9	0.45	-0.75	1.8
Yarmouth, N. S.....	29.86	29.93	-.09	50.3	+ 2.7	56.3	44.2	2.67	-2.03	T.	Qu' Appelle, Assin.....	27.70	29.97	.00	39.2	- 0.2	49.1	29.3	0.28	-0.82	0.2
Charlottetown, P. E. I.....	29.81	29.85	-.11	50.1	+ 3.6	55.1	45.1	7.33	+2.43	0.6	Medicine Hat, Alberta.....	27.70	29.99	+.02	45.5	+ 0.7	58.4	32.6	0.13	-0.45	.....
Chatham, N. B.....	29.83	29.85	-.11	47.1	+ 4.1	54.4	39.9	6.23	+2.37	2.0	Swift Current, Sask.....	27.42	30.02	+.05	40.2	+ 1.9	50.5	29.9	0.44	-0.44	1.0
Father Point, Que.....	29.87	29.89	-.06	42.6	+ 2.8	48.0	37.3	4.82	+1.92	2.7	Calgary, Alberta.....	26.40	29.96	+.01	40.6	+ 0.5	50.7	30.4	0.64	+0.16	4.6
Quebec, Que.....	29.61	29.94	-.06	44.8	+ 2.4	51.0	38.6	2.20	-0.95	.....	Banff, Alberta.....	25.37	29.99	+.04	38.9	+ 0.4	47.4	30.4	0.70	-0.32	3.9
Montreal, Que.....	29.76	29.97	-.04	46.7	+ 1.9	52.2	41.2	0.89	-2.24	T.	Edmonton, Alberta.....	27.65	29.97	+.04	39.4	+ 1.7	50.9	28.0	0.30	-0.40	1.6
Rockliffe, Ont.....	29.37	29.99	-.02	44.2	+ 1.4	55.1	33.4	1.71	-0.72	0.1	Prince Albert, Sask.....	28.38	29.96	-.01	38.4	+ 1.3	47.3	29.4	0.97	+0.14	2.0
Ottawa, Ont.....	29.73	30.06	+.05	44.8	+ 1.0	52.6	36.9	1.13	-1.42	T.	Battleford, Sask.....	28.22	29.98	+.01	39.2	- 0.4	48.7	29.6	0.36	-0.09	0.3
Kingston, Ont.....	29.72	30.03	.00	46.6	- 0.4	54.7	38.5	2.11	-0.62	T.	Kamloops, B. C.....	28.69	29.97	+.01	47.7	- 0.7	56.2	39.2	0.50	-0.11	.....
Toronto, Ont.....	29.67	30.05	+.01	46.2	- 0.4	55.5	36.9	1.18	-1.18	0.1	Victoria, B. C.....	29.93	29.03	+.02	50.4	+ 1.2	56.6	44.2	2.31	-0.06	.....
White River, Ont.....	28.64	29.97	-.01	39.1	+ 2.0	47.4	30.9	1.38	-0.97	1.7	Barkerville, B. C.....	.....	.....	.....	35.8	- 3.9	41.7	29.9	4.00	+1.30	.....
Port Stanley, Ont.....	29.43	30.09	+.04	44.9	- 2.9	53.4	36.4	1.35	-1.63	0.2	Dawson, Yukon.....	28.72	.....	.....	24.0	.....	29.9	18.2	0.96	.....	6.9
Southampton, Ont.....	29.35	.....	.....	45.5	- 0.6	52.5	38.5	2.16	-1.01	0.5	Hamilton, Bermuda.....	29.93	30.09	+.07	72.8	- 0.2	78.1	67.4	7.66	+0.95	.....





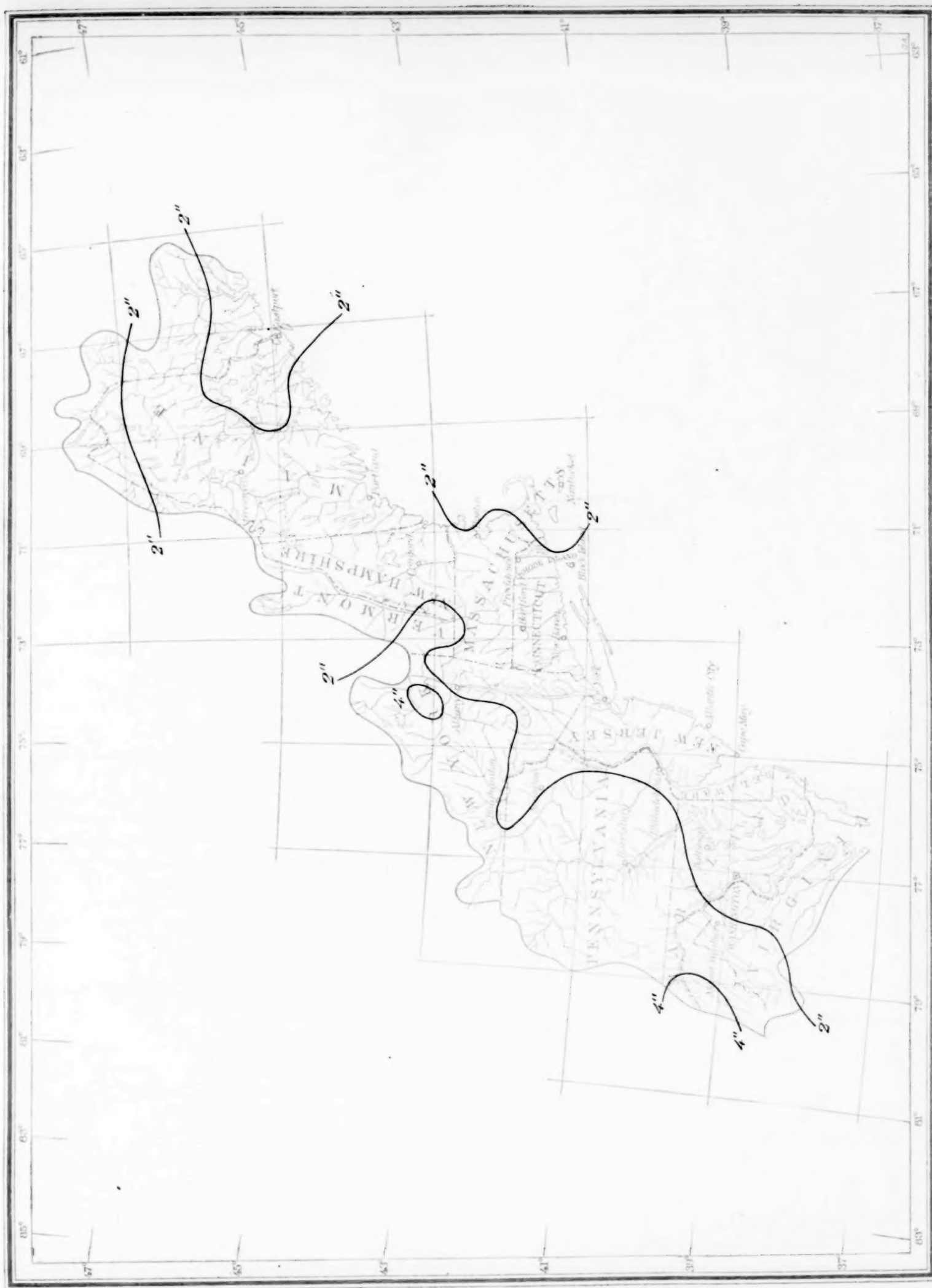
Climatological Districts of the United States.







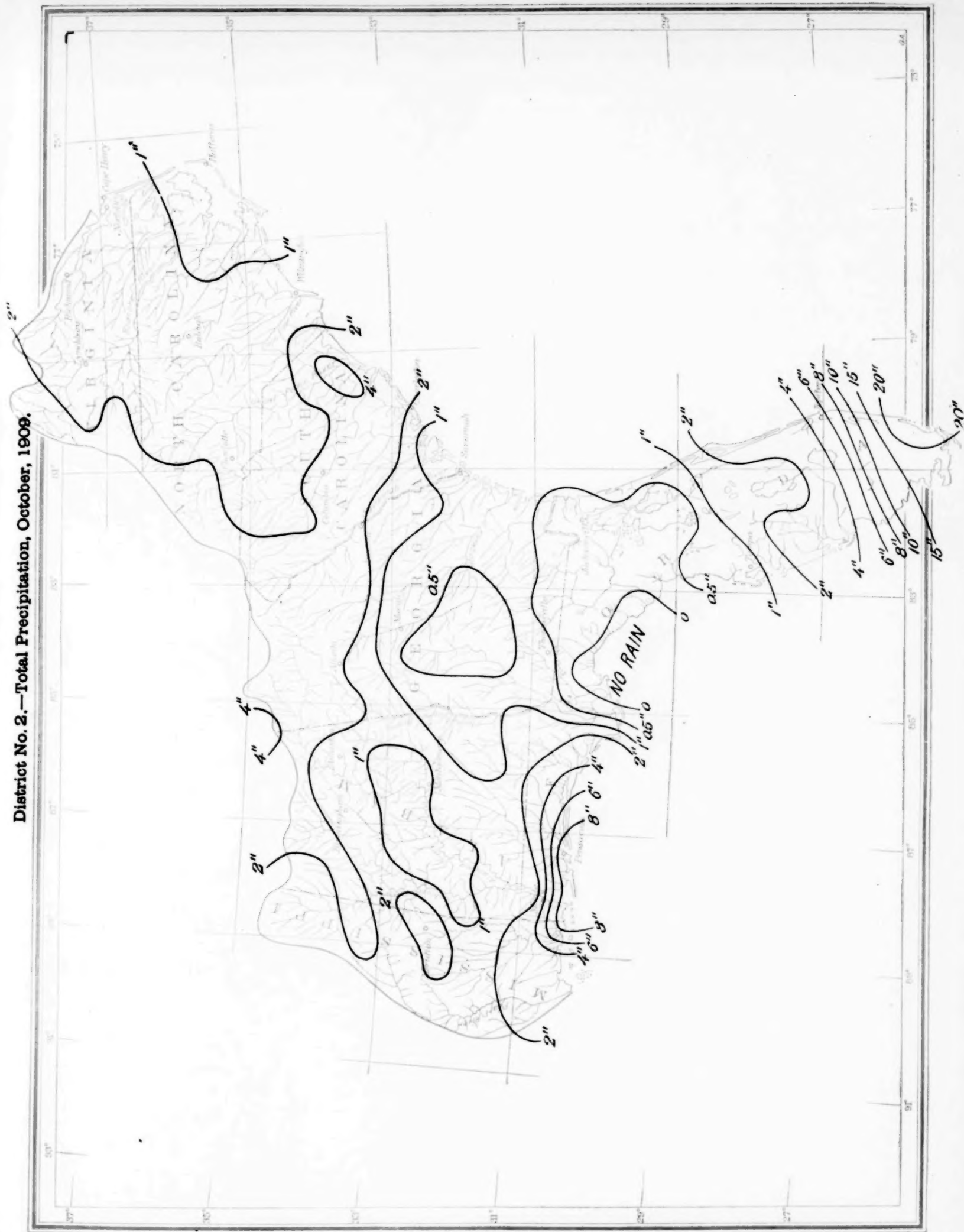
District No. 1.—Total Precipitation, October, 1909.



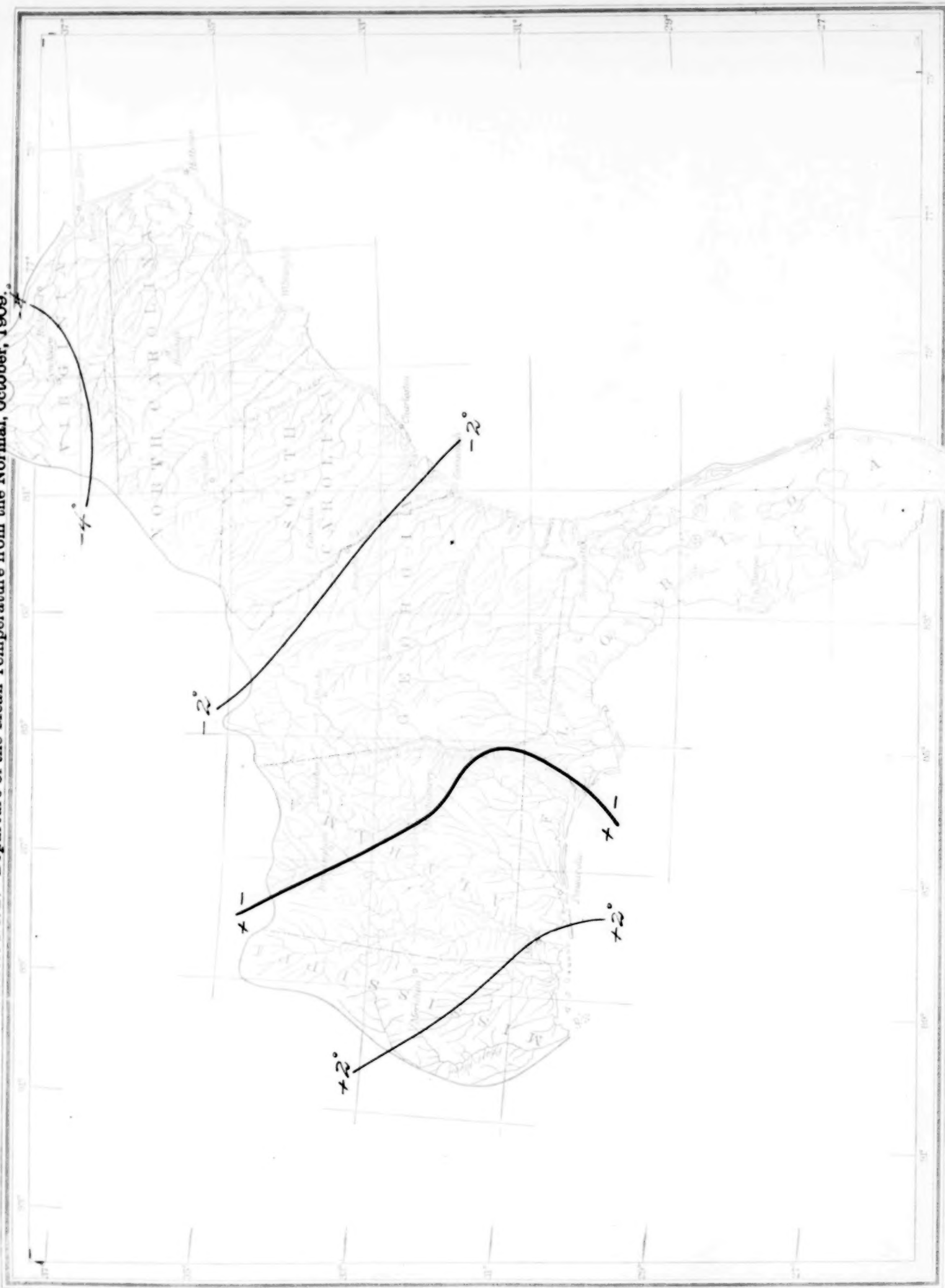




District No. 2.—Total Precipitation, October, 1909.

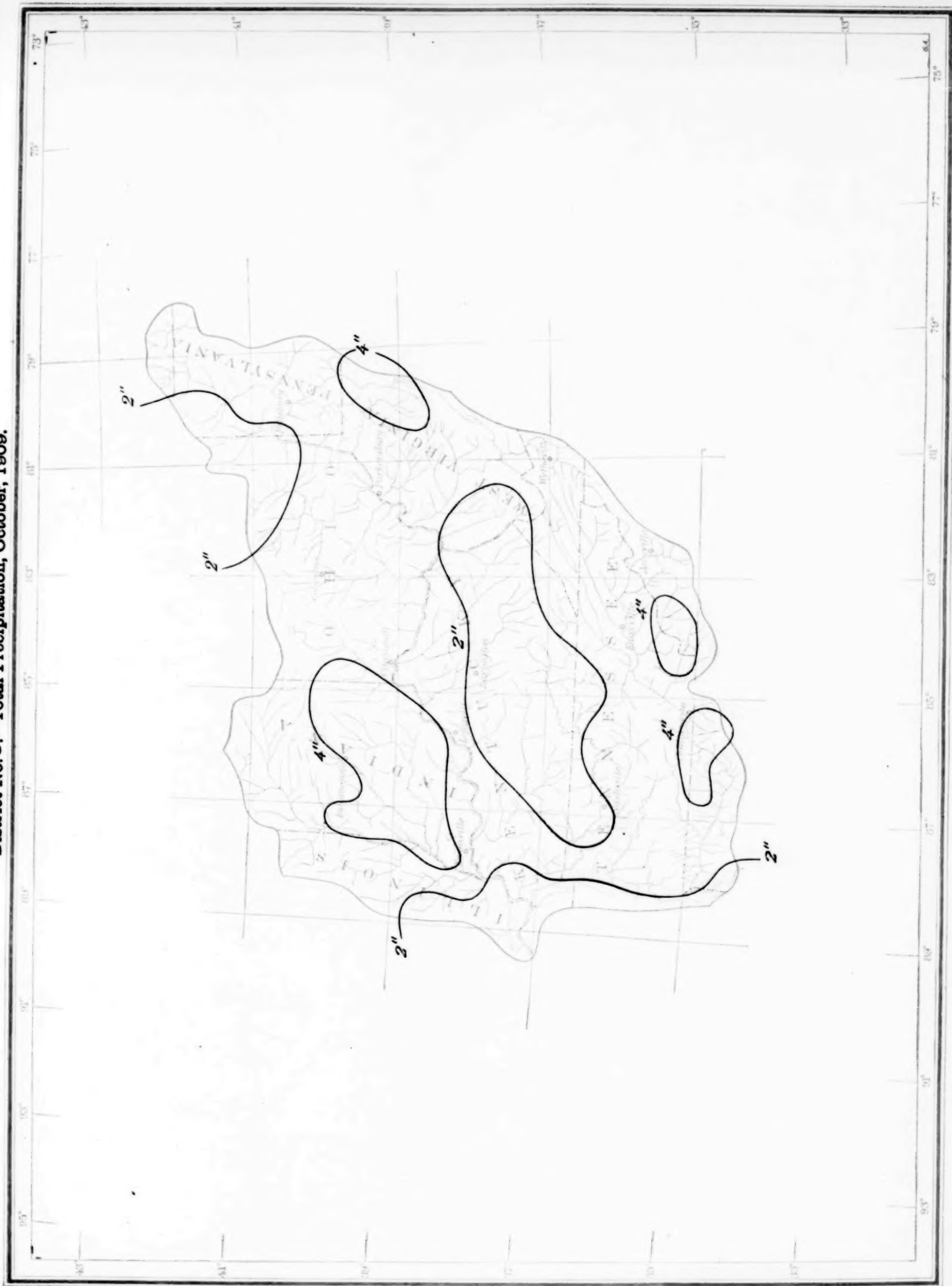


District No. 2.—Departure of the Mean Temperature from the Normal, October, 1908.

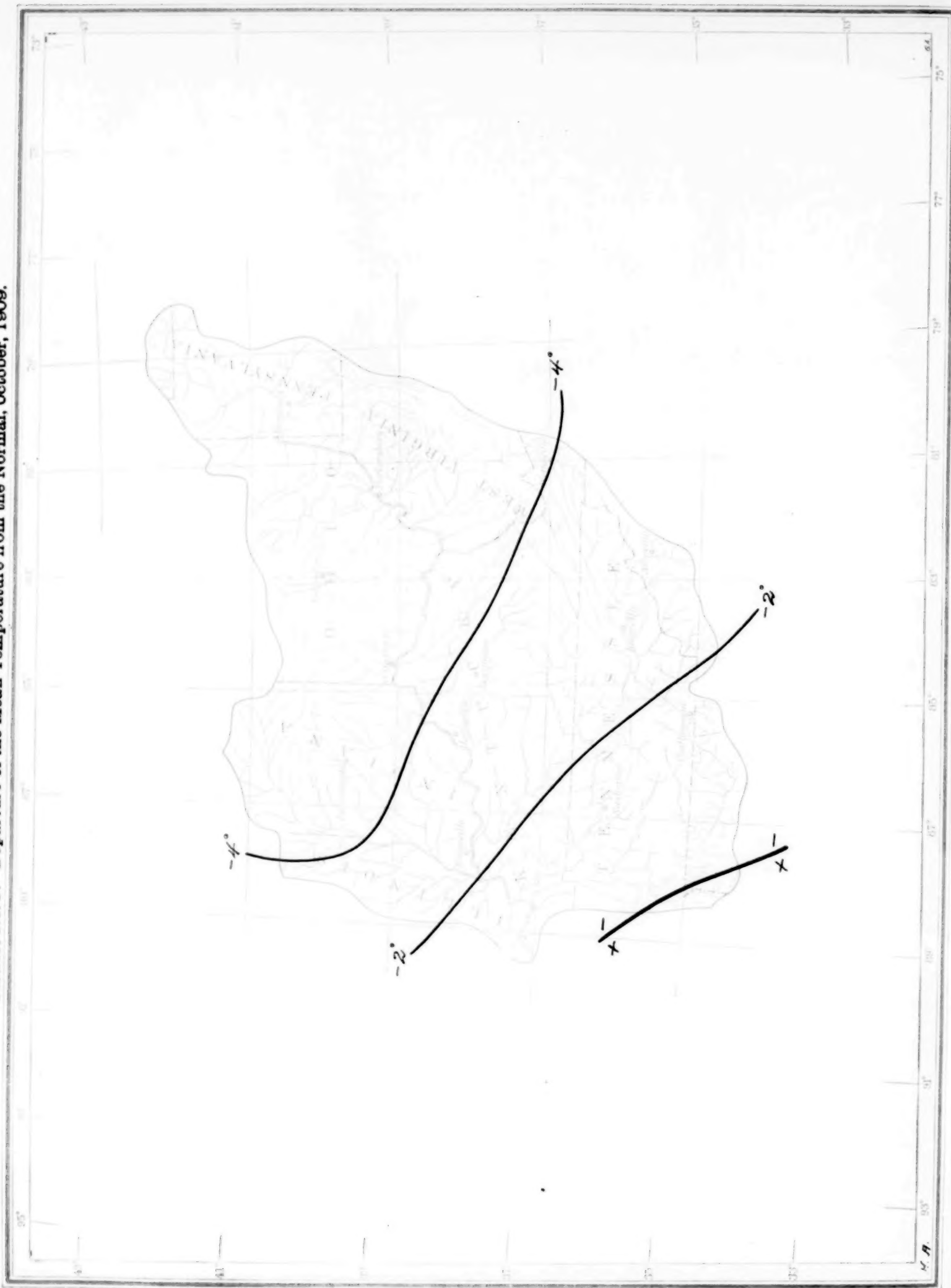




District No. 3.—Total Precipitation, October, 1909.

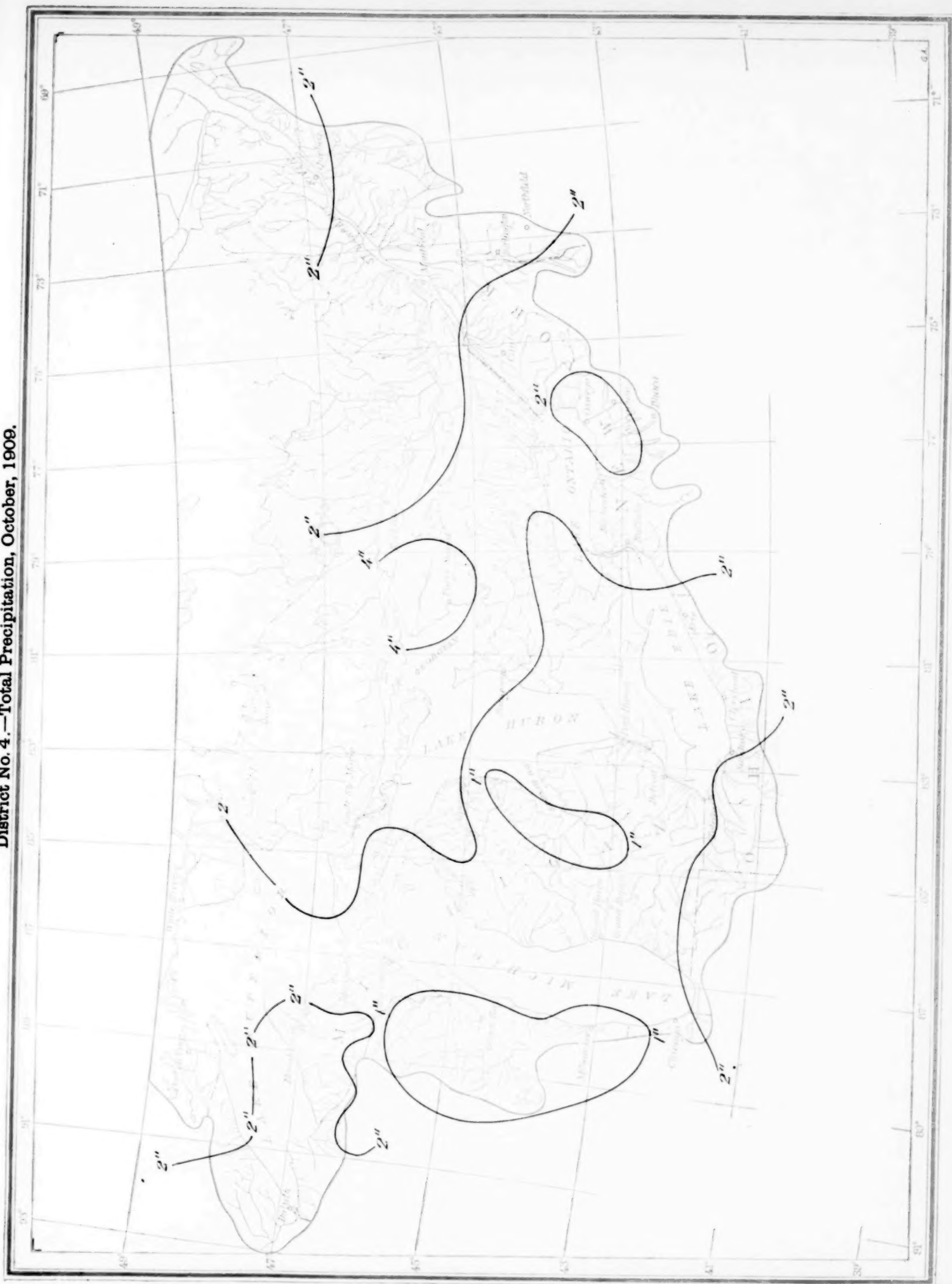


District No. 3.—Departure of the Mean Temperature from the Normal, October, 1909.

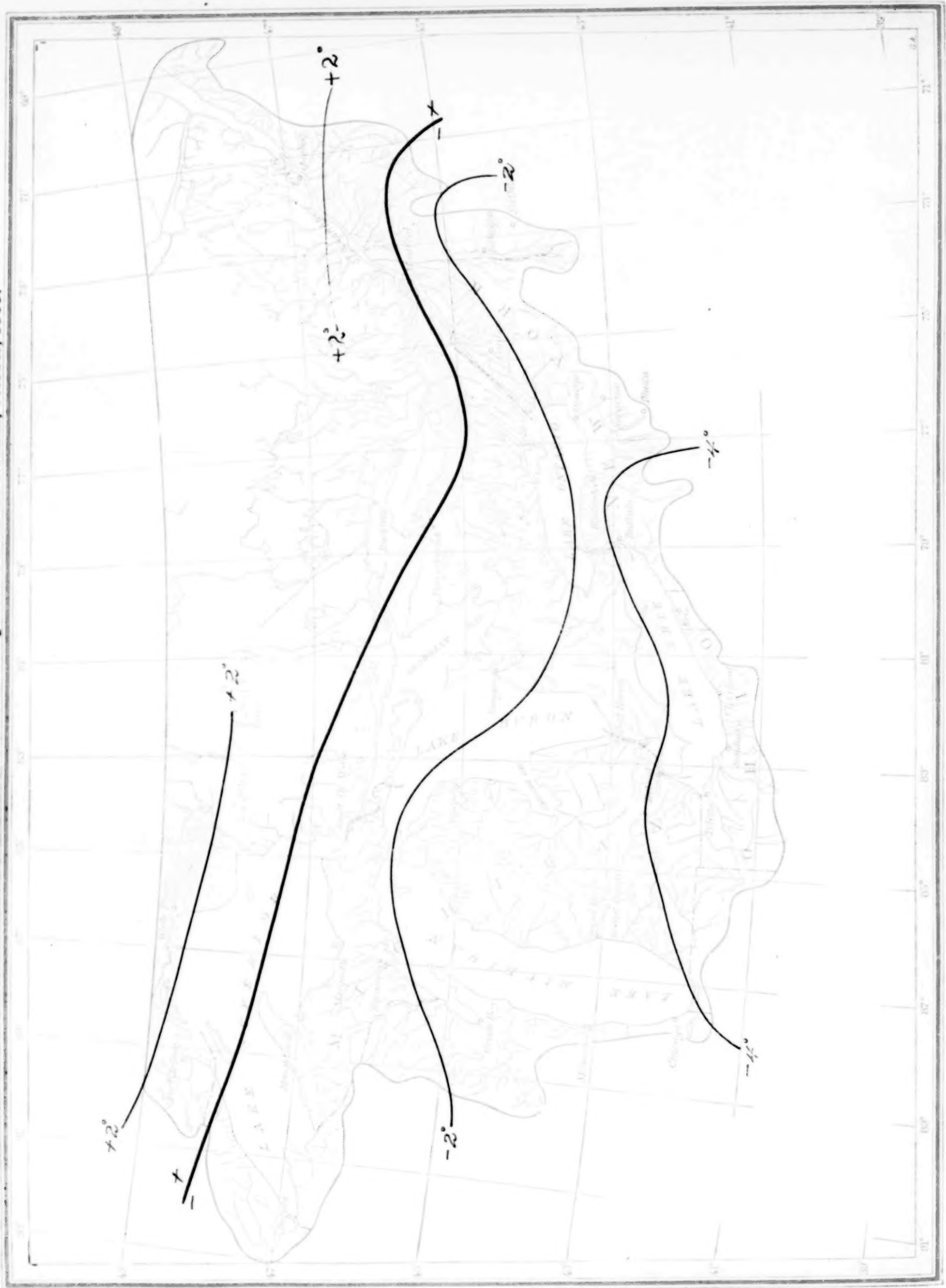




District No. 4.—Total Precipitation, October, 1908.



District No. 4. —Departure of the Mean Temperature from the Normal, October, 1909.





District No. 5.—Total Precipitation, October, 1908.

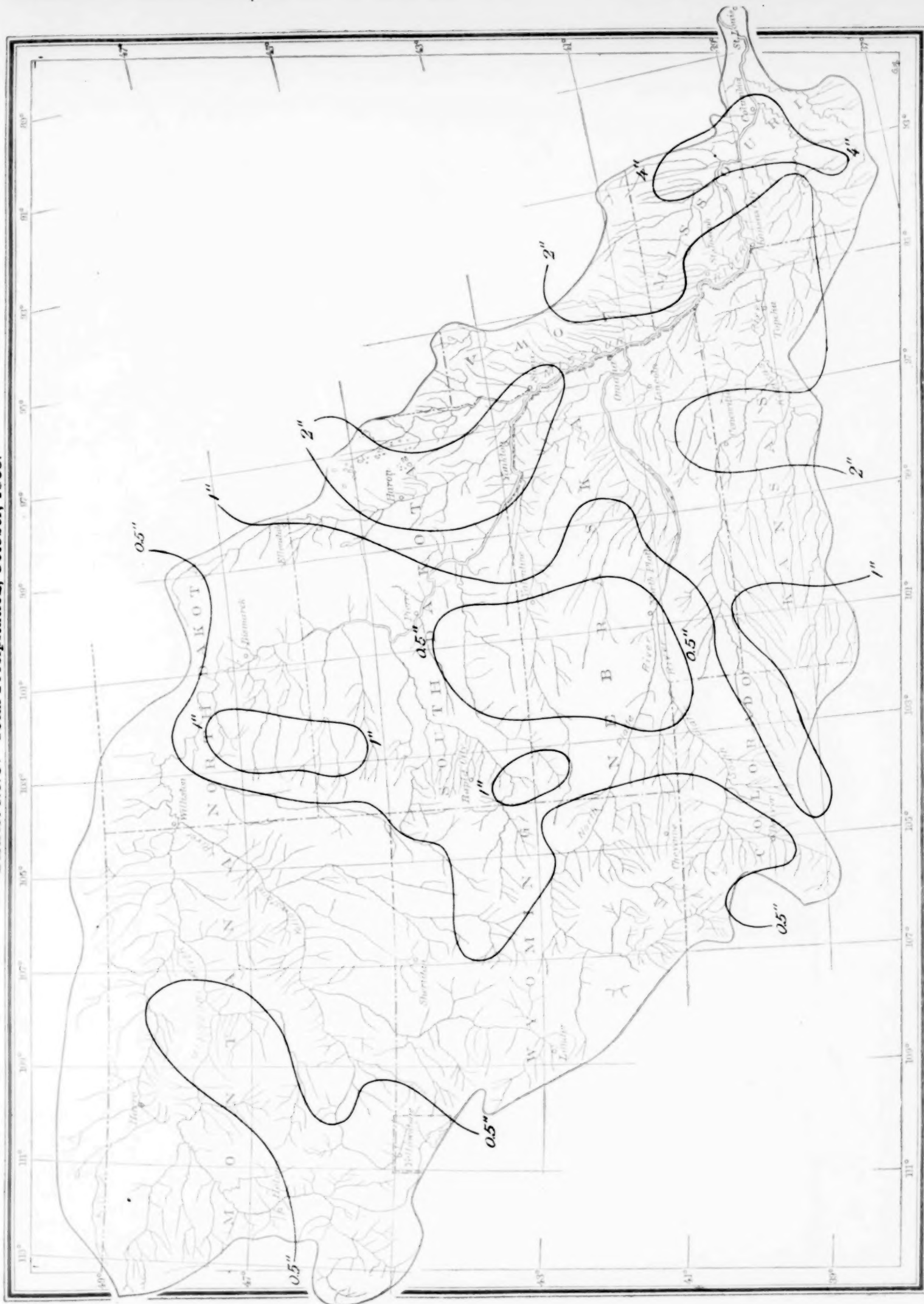


District No. 5.—Departure of the Mean Temperature from the Normal, October, 1909.

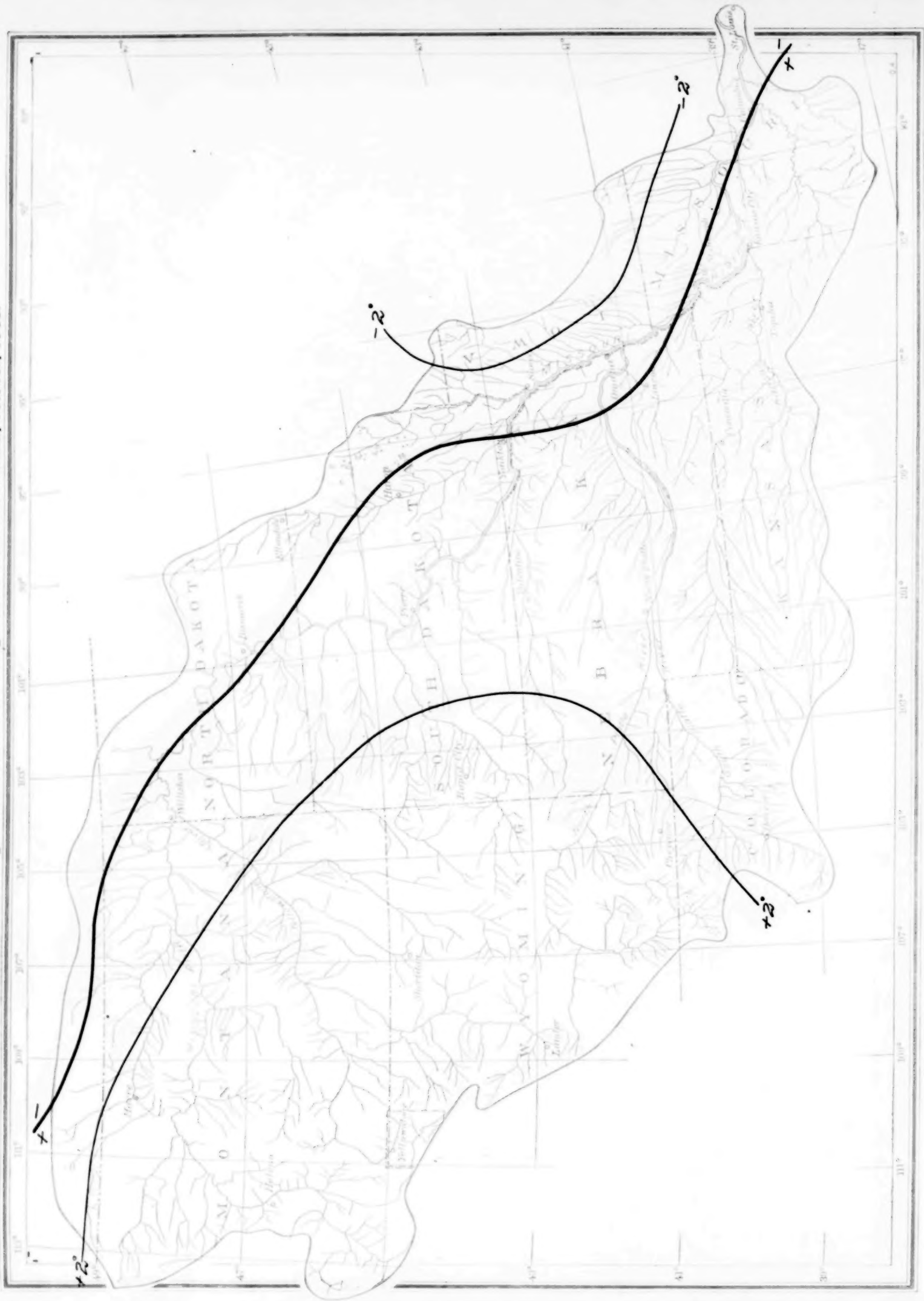




District No. 6.—Total Precipitation, October, 1909.

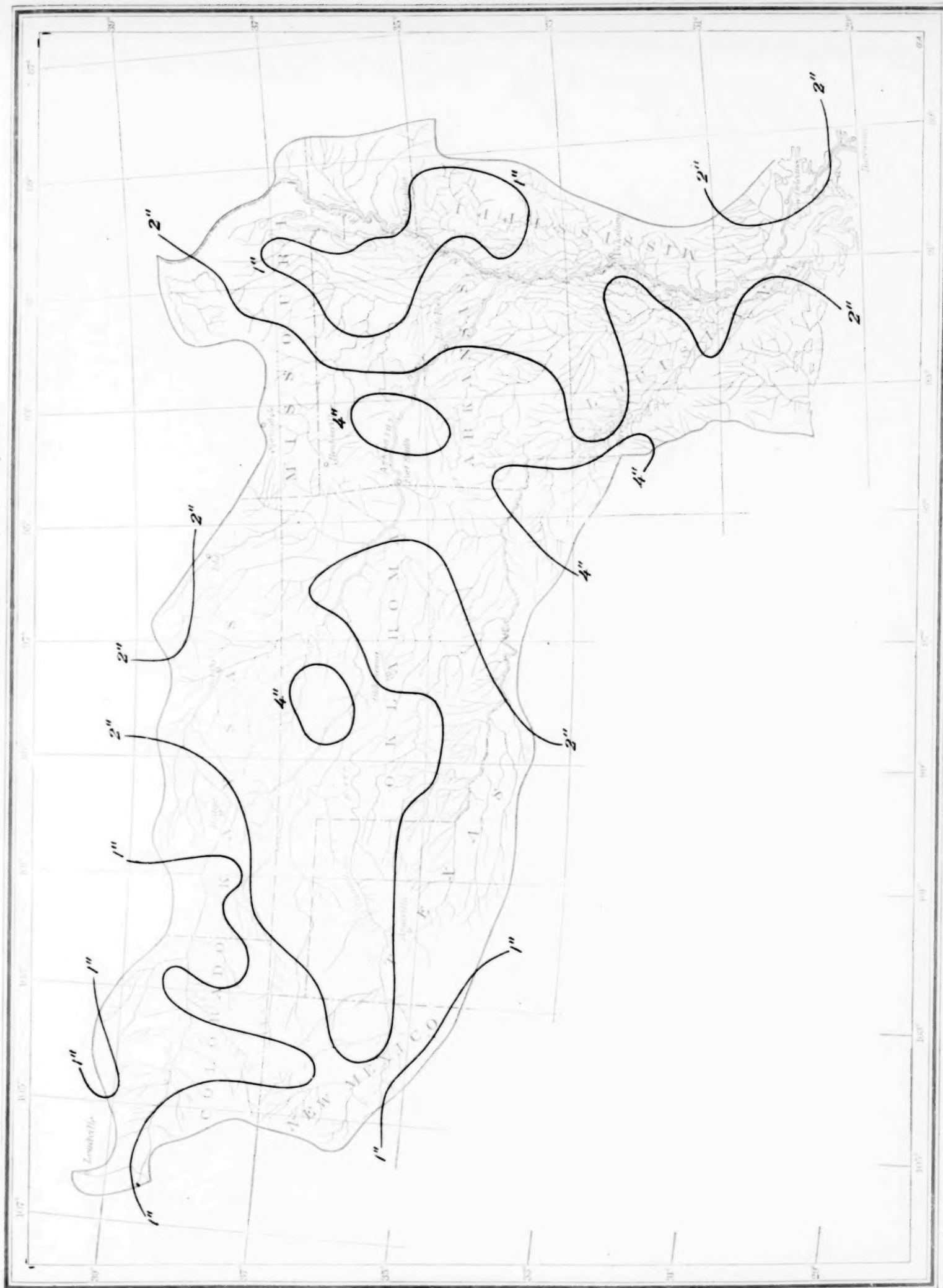


District No. 6.—Departure of the Mean Temperature from the Normal, October, 1909.

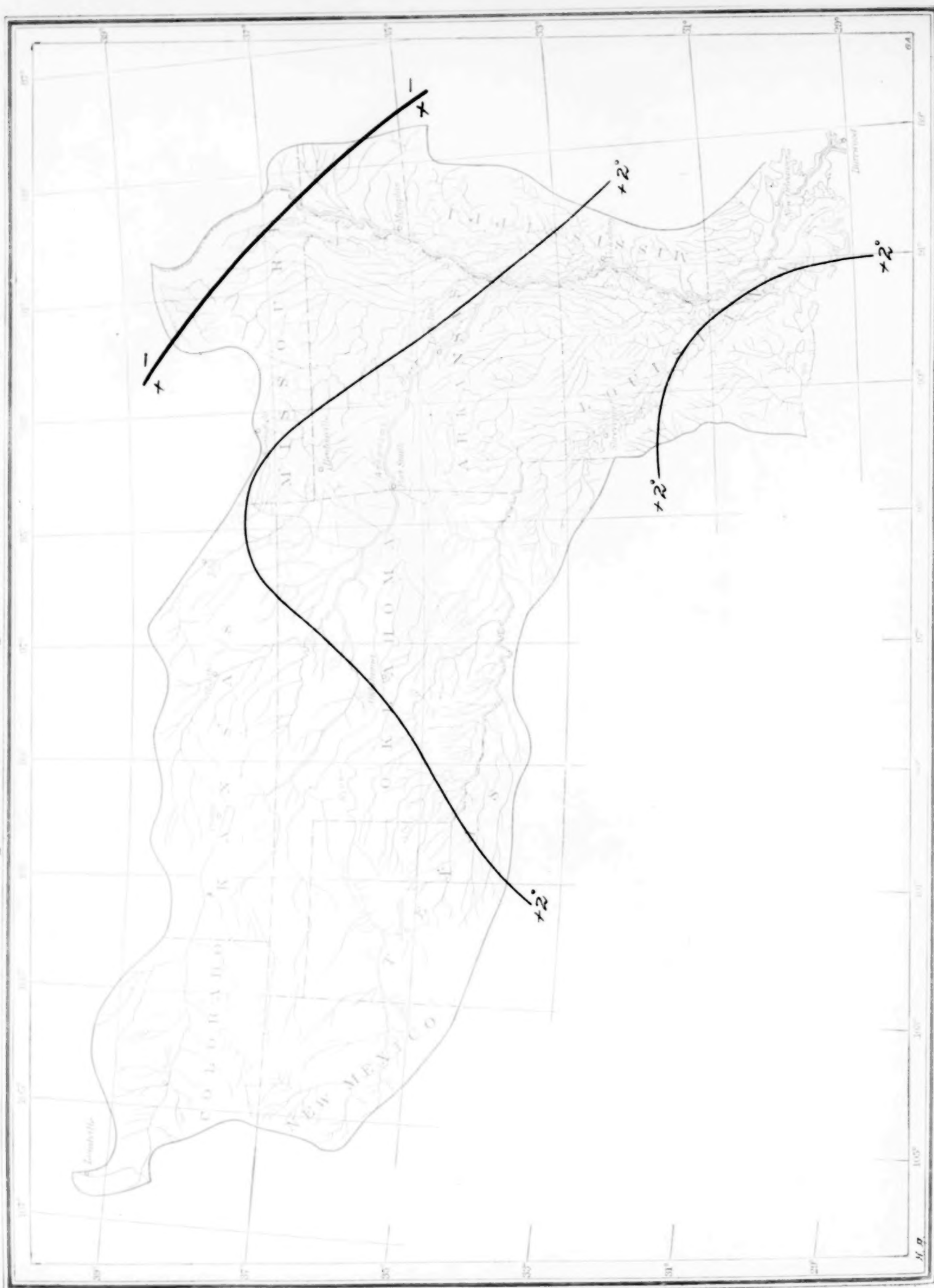




District No. 7.—Total Precipitation, October, 1909.



District No. 7.—Departure of the Mean Temperature from the Normal, October, 1909.





**District No. 8.—Total Precipitation, October, 1909.**



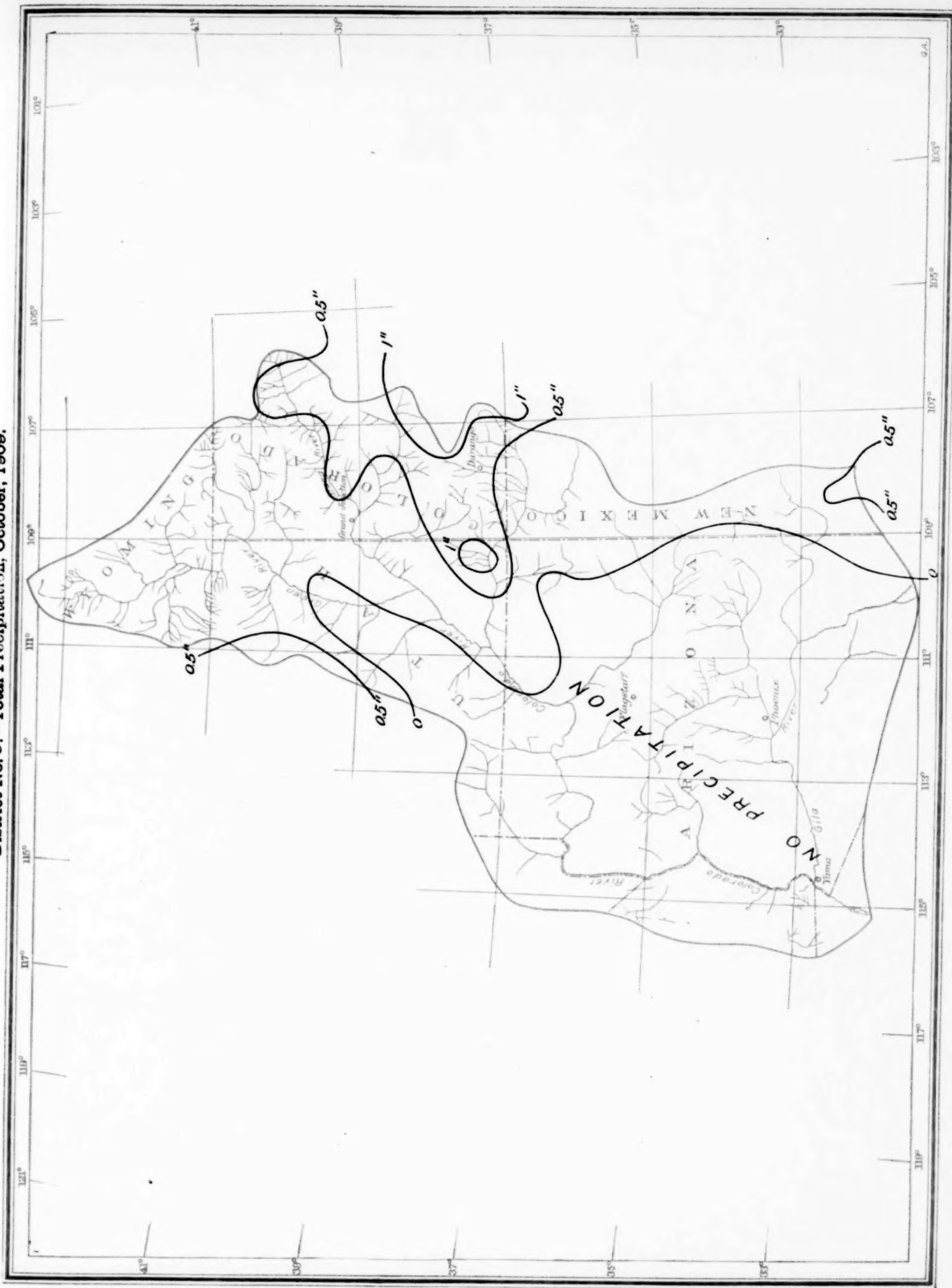
District No. 8.—Departure of the Mean Temperature from the Normal, October, 1909.



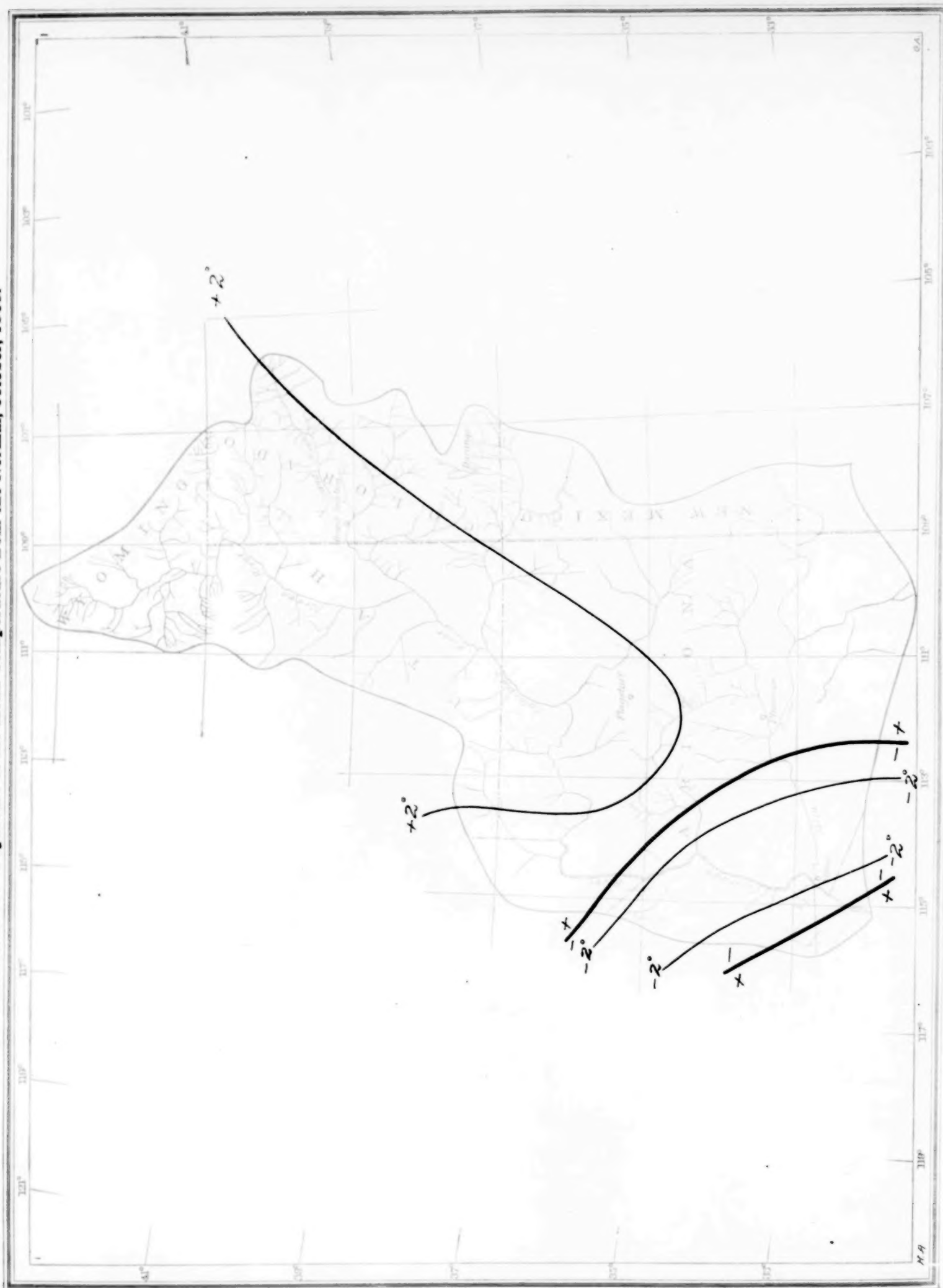
District No. 9.—Total Precipitation, October, 1909.



District No. 9.—Total Precipitation, October, 1909.

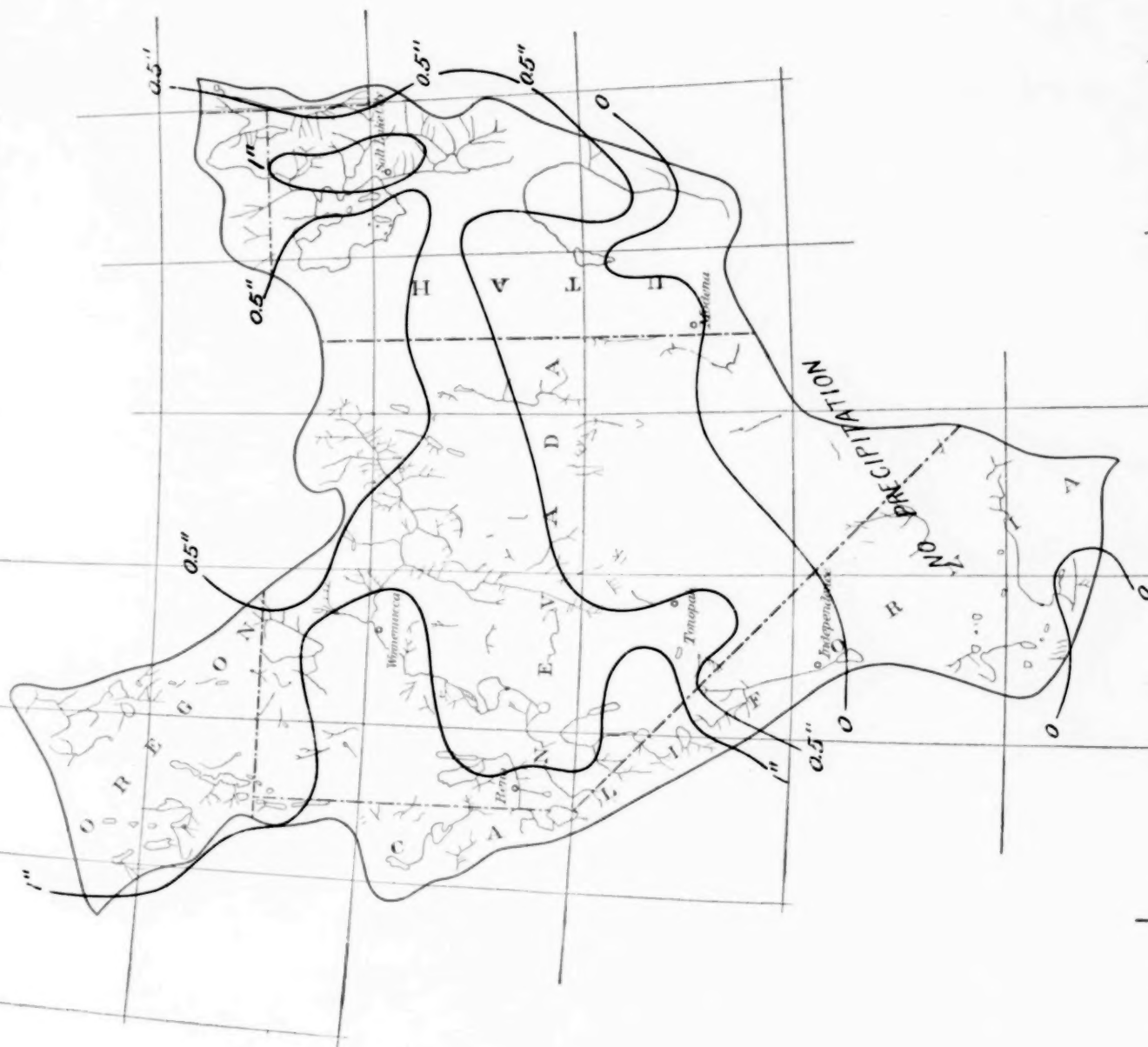


District No. 9.—Departure of the Mean Temperature from the Normal, October, 1909.





This map illustrates precipitation patterns across the Hawaiian Islands. The map is overlaid with a grid of latitude and longitude lines. Contour lines represent different levels of precipitation, with labels such as 0.5", 1", and 1.5". The islands shown include Oahu, Maui, Hawaii, Johnston Atoll, and several smaller islands like Midway, Laysan, and Kauai. A dashed line labeled "NO PRECIPITATION" runs diagonally across the map, indicating areas with no recorded precipitation. The map also shows various geographical features like rivers and coastlines.

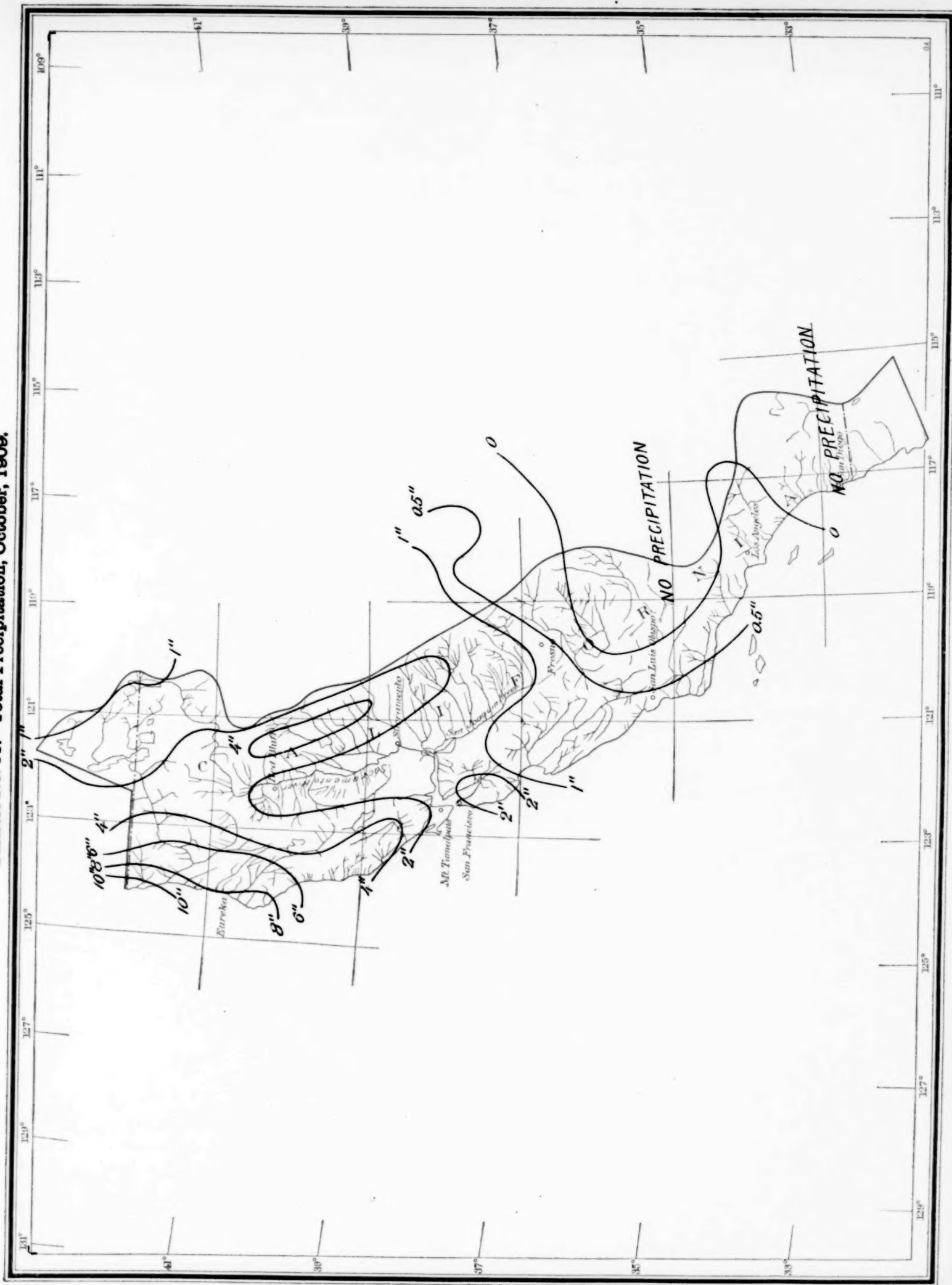


District No. 10.—Departure of the Mean Temperature from the Normal, October, 1909.

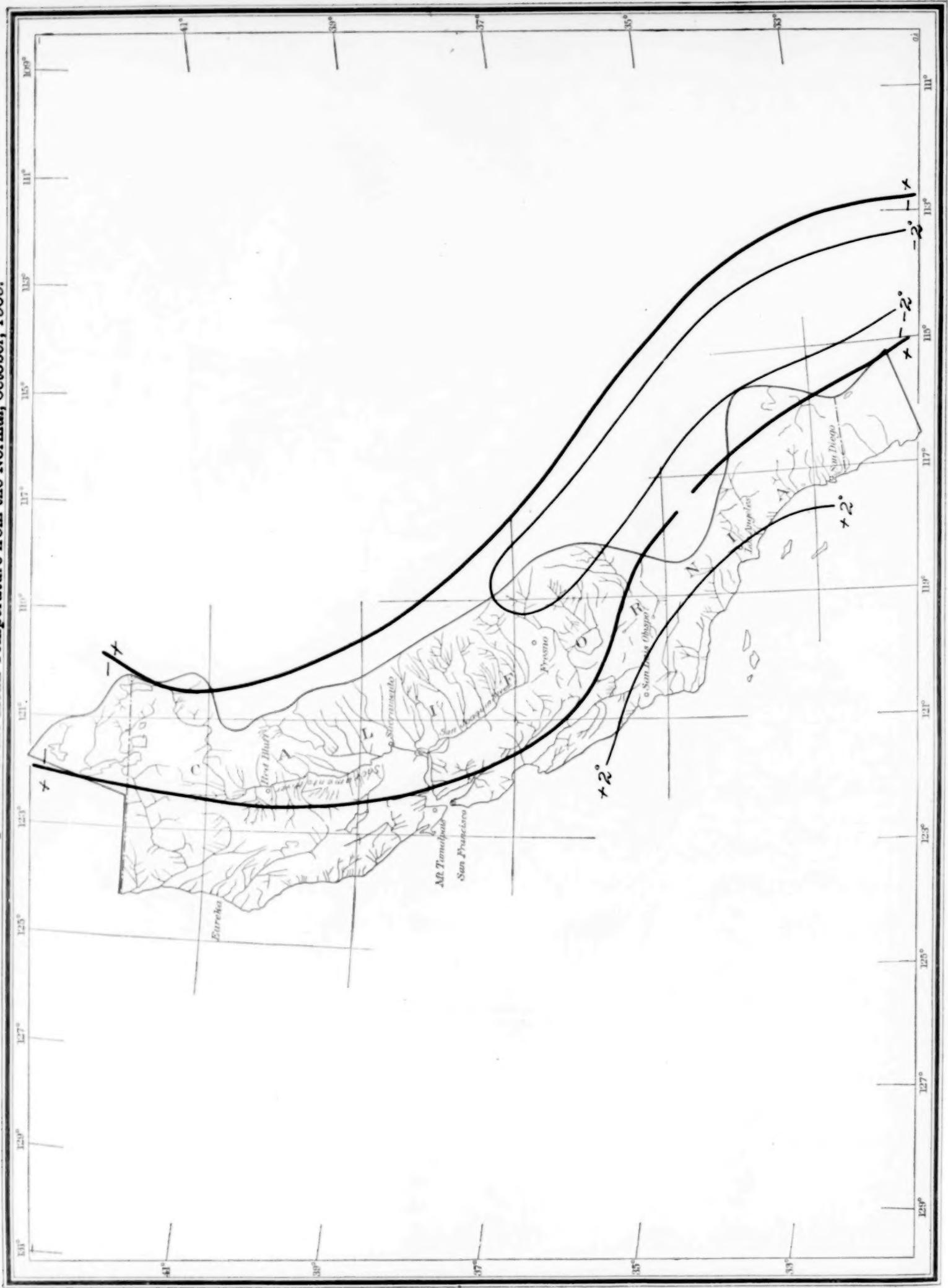




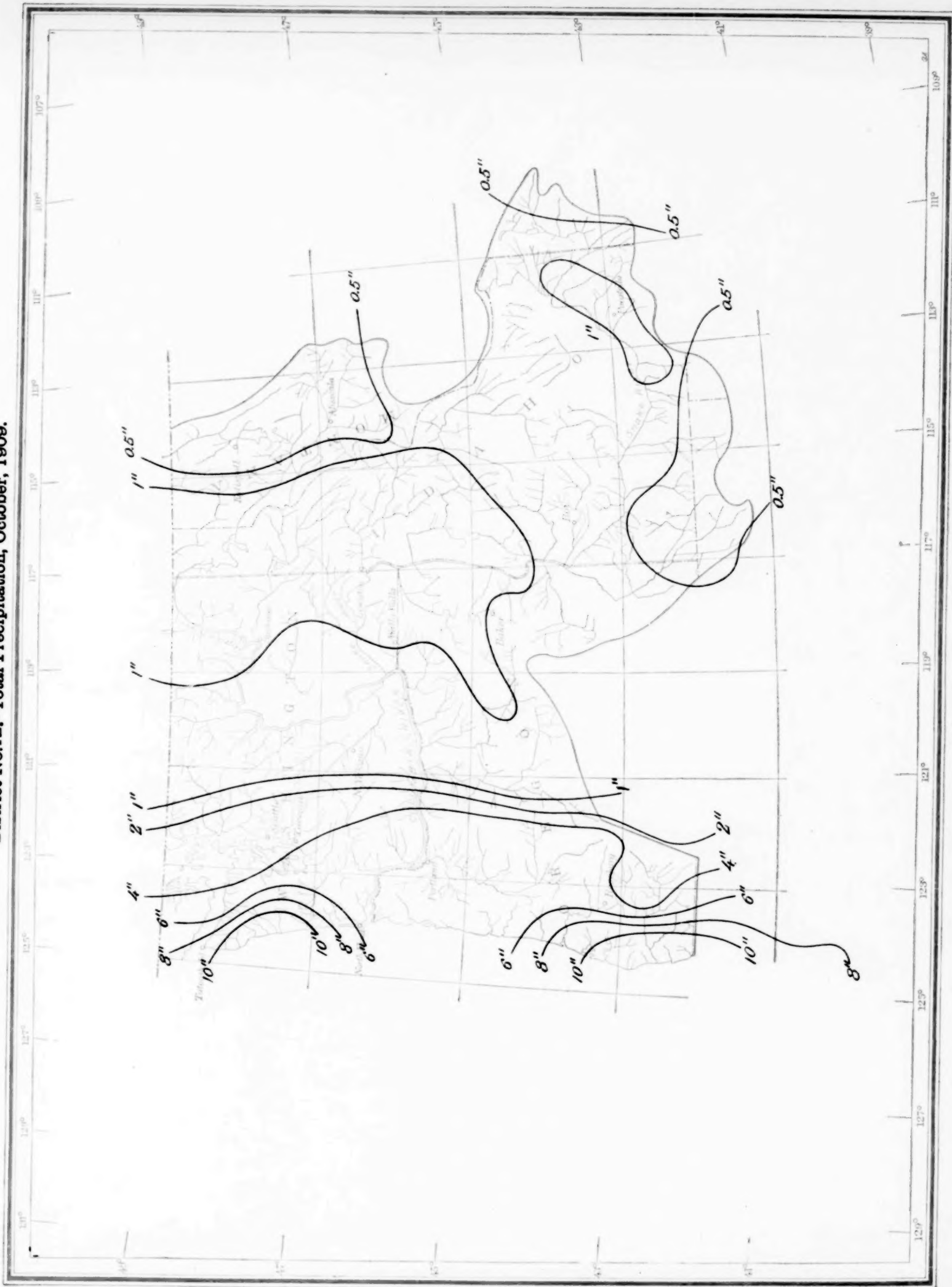
District No. 11.—Total Precipitation, October, 1909.



District No. 11.—Departure of the Mean Temperature from the Normal, October, 1909.



District No. 12.—Total Precipitation, October, 1909.





District No.12--Departure of the Mean Temperature from the Normal, October, 1909.

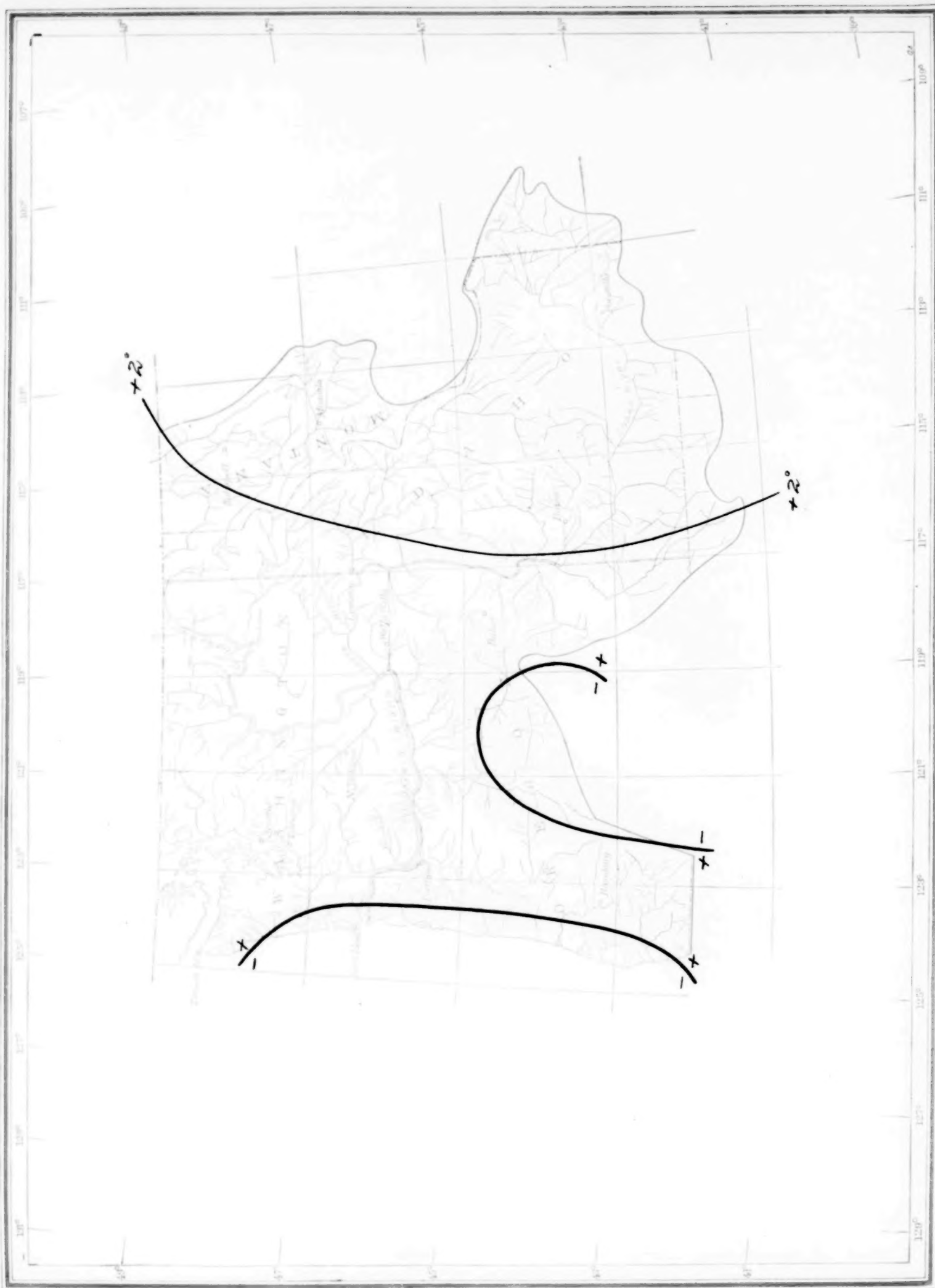


Chart I. Hydrographs of Several Principal Rivers, October, 1909.

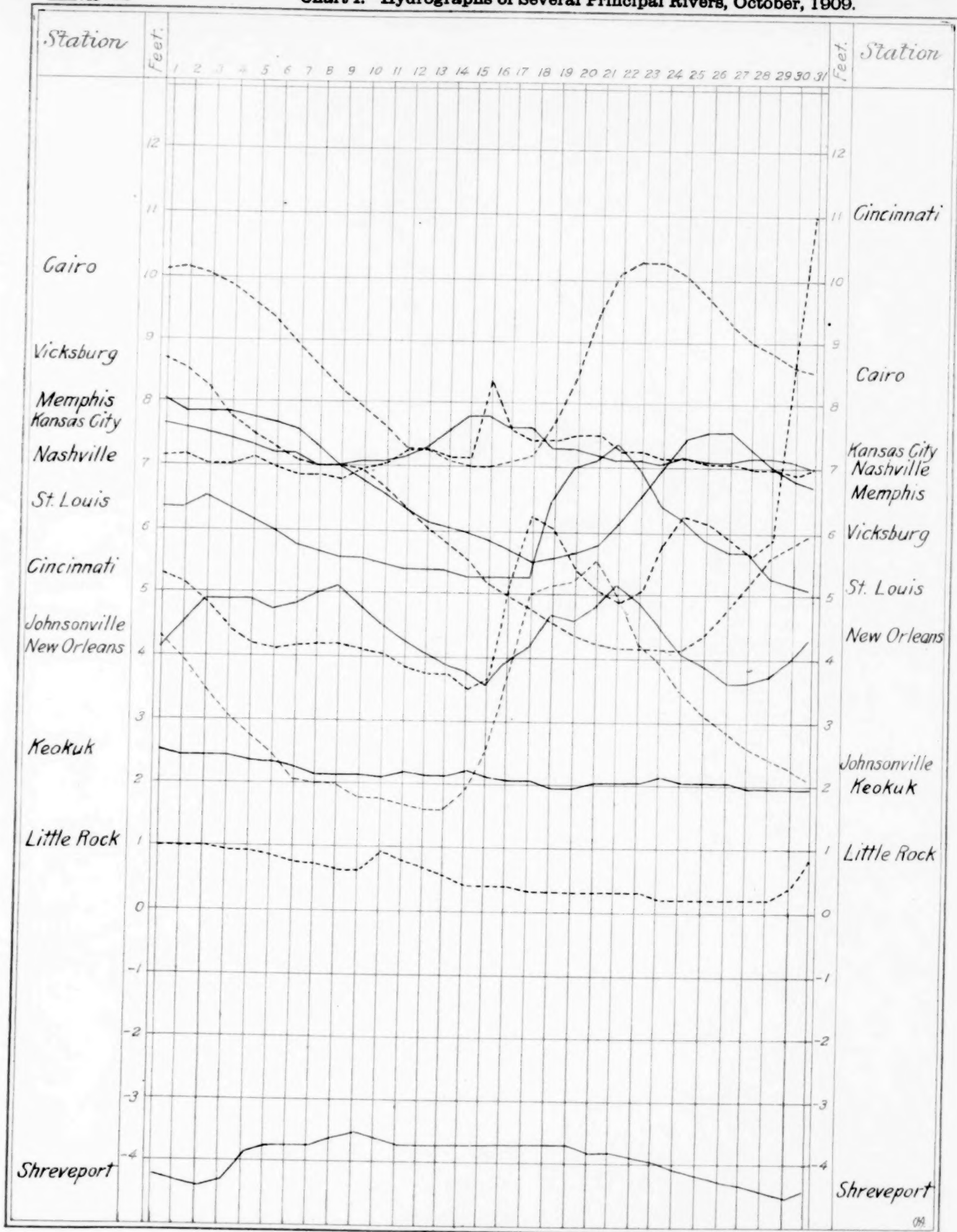


Chart II. Tracks of Centers of High Areas, October, 1909.

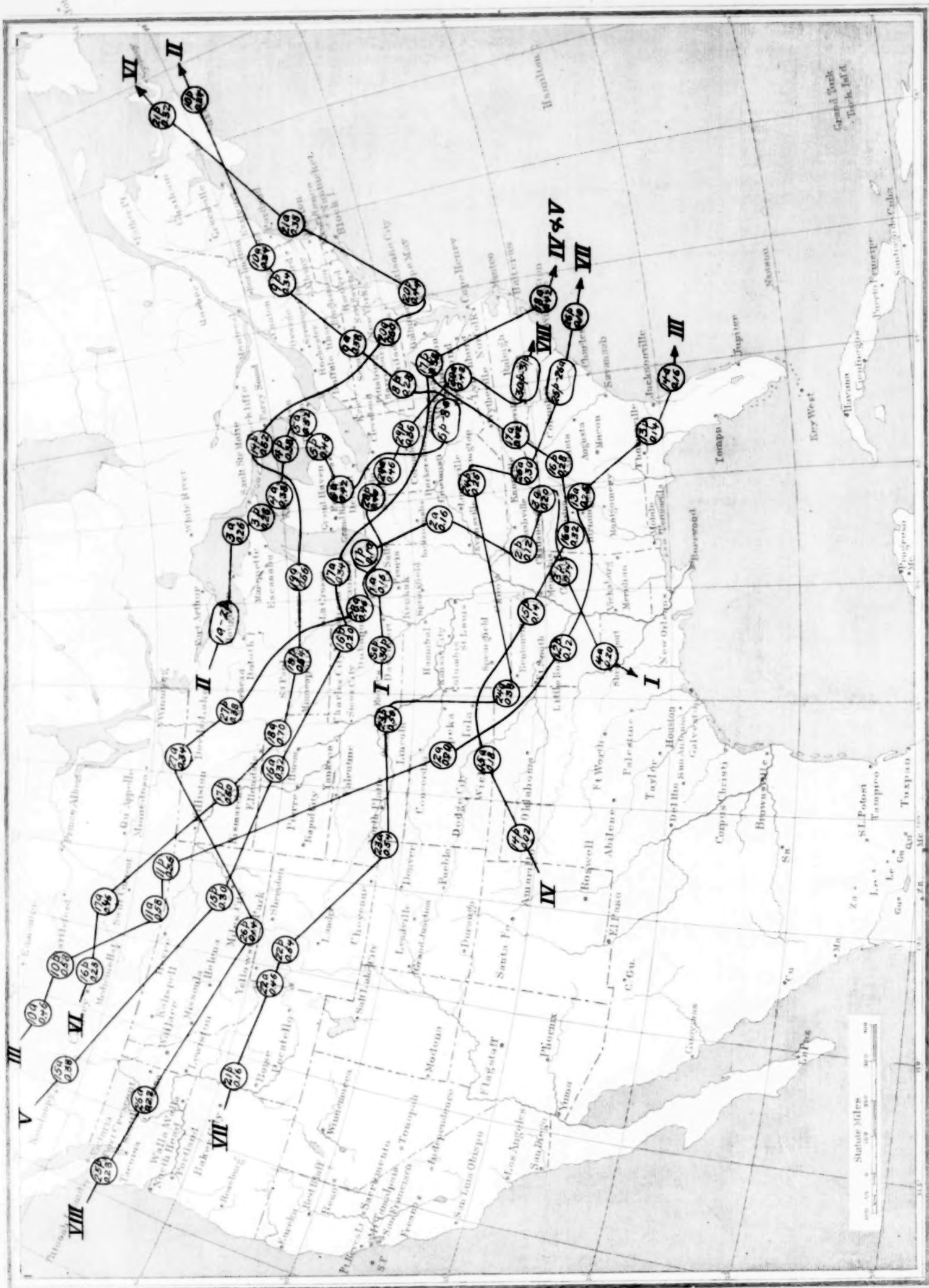


Chart III. Tracks of Centers of Low Areas, October, 1909.





Chart III. Tracks of Centers of Low Areas, October, 1909.

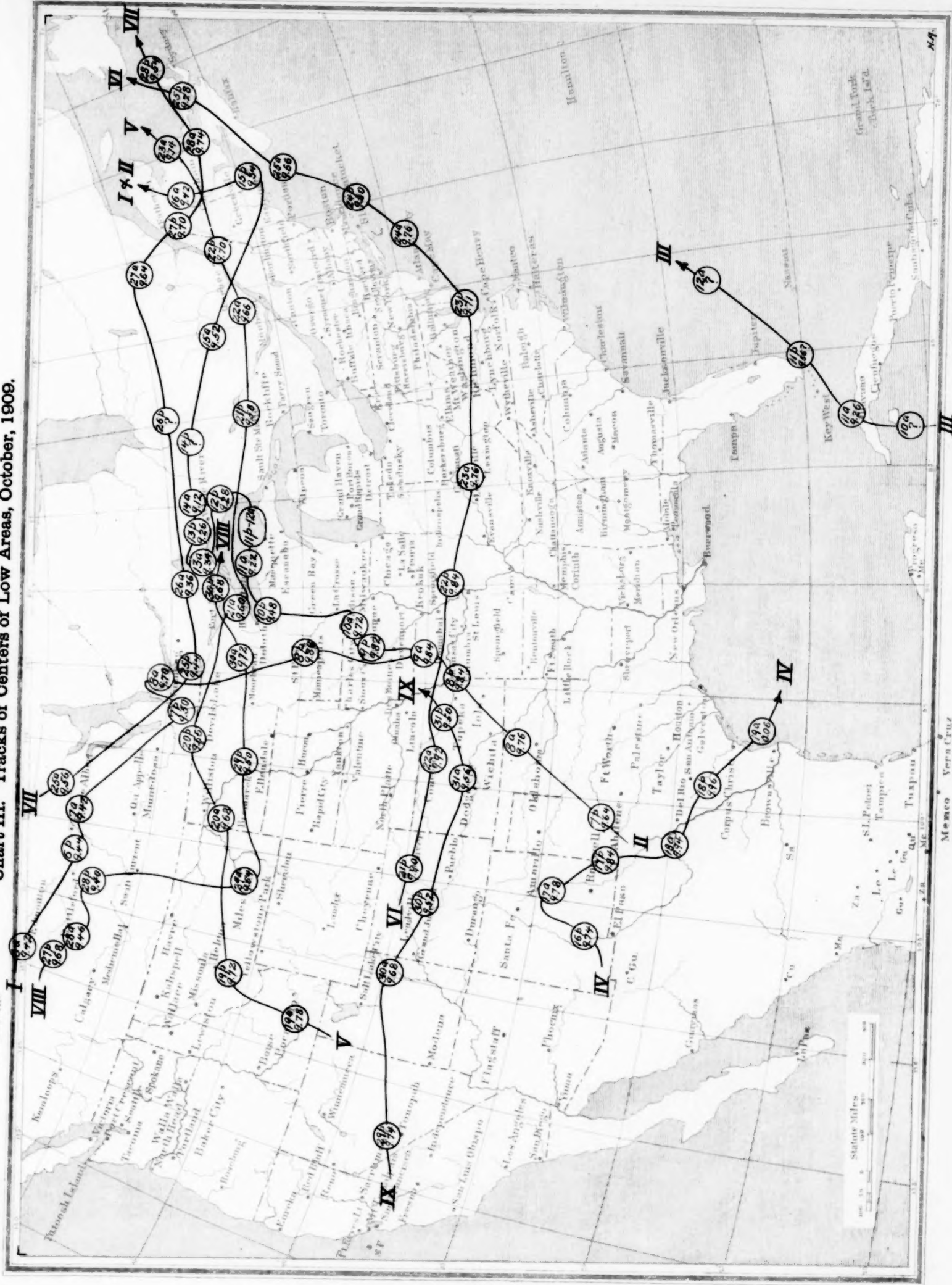


Chart IV. Departure of the Mean Temperature from the Normal, October, 1909.



Chart V. Total Precipitation, October, 1909.



Chart V. Total Precipitation, October, 1909.

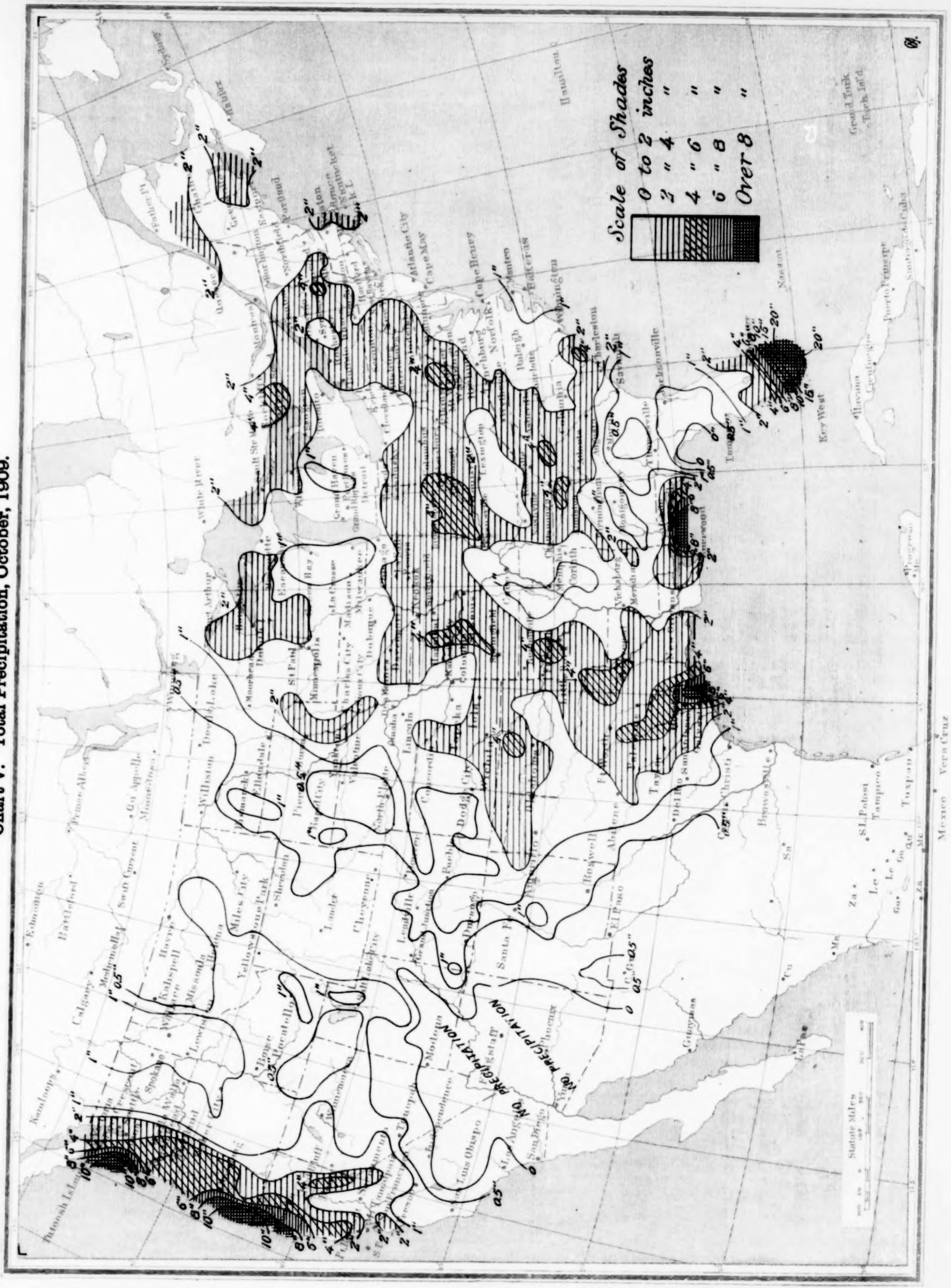




Chart VI. Percentage of Clear Sky between Sunrise and Sunset, October, 1909.

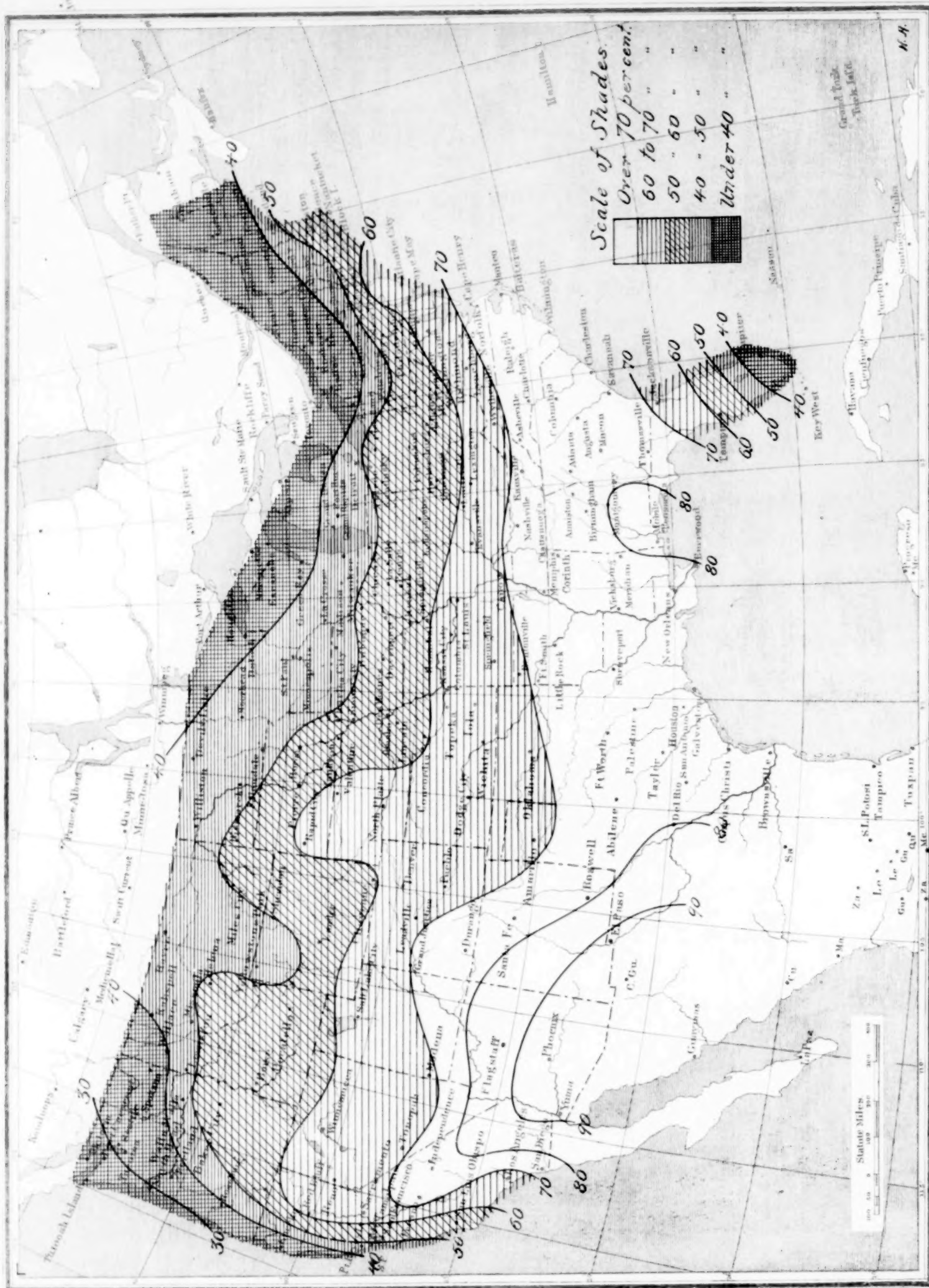


Chart VII. Isobars and Isotherms at Sea Level; Prevailing Winds, October, 1909.

Chart VII. Isobars and Isotherms at Sea Level; Prevailing Winds, October, 1909

